

# CIO

**BUSINESS TECHNOLOGY LEADERSHIP**

**CRM**

How to design a master technology strategy to leverage your customer data

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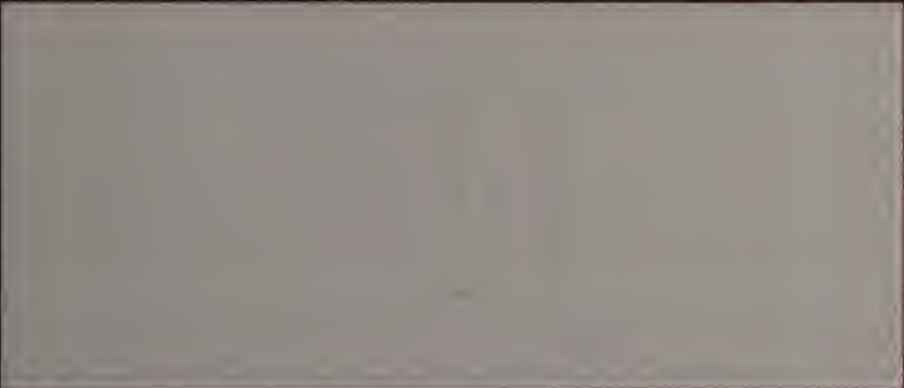
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**DATA MINING**

VERSUS  
TERROR



Can the government's current strategy find and stop the real threats to our nation's security?

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**BY BEN WORTHEN**



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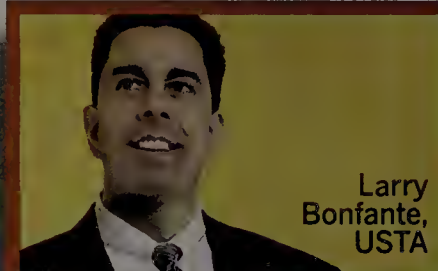
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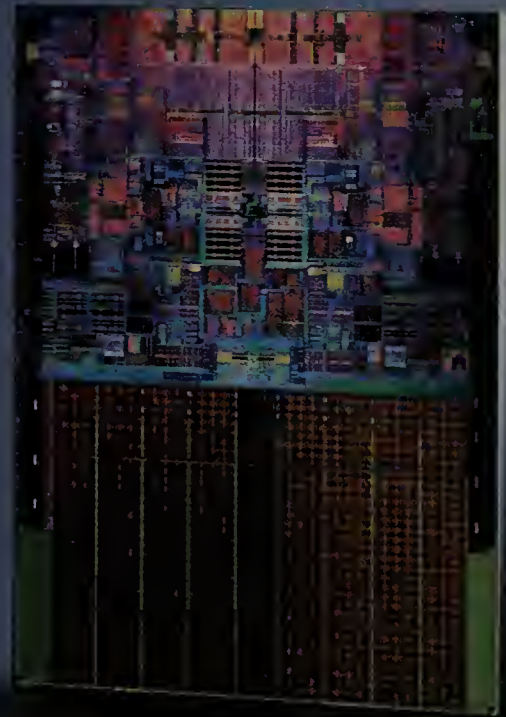
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# I, User

A tale of madness, confusion, rage and remorse. With a moral at the end.

## I have a confession to make.

I am a user.

Yes, although I help edit a business technology magazine, I myself am just a simple user of the services IT provides. And like most users, I am often bugged, bothered, bewildered (and short-tempered) about IT changes.

For instance, we recently migrated to a new content management system, and one of its features is the automation of the print function. As a result, I no longer have to do the back-breaking work of dragging "Print" down from the File menu and clicking on it manually. Instead, our new system recognizes that I want to print something when I change its status in the system. And then it prints it. Or doesn't. And when

it doesn't, there's nothing I can do about it. It's automated, see? Meaning I have no control over it. And because I have no control, a signal goes off deep in the reptilian part of my brain that it's time to attack someone. Someone in IS.

Rationally, I know all this is not IS's fault. But because feelings of powerlessness lead to feelings of rage, rationality simply doesn't enter the equation.

My point is this: CIOs need to approach automation carefully because by definition it removes control from users. Therefore, CIOs need to communicate, they need to be open, and they need to market changes well. Check out United States Tennis Association CIO Larry Bonfante's column, "No Marketing, No Sale" (Page 28) on how to do that successfully through multiple channels in multiple ways. Before somebody gets hurt.

Of course, I say that jokingly. I'm completely harmless. But the world out there is anything but. In Senior Writer Ben Worthen's cover story, "IT Versus Terror" (Page 34), Worthen's reporting reveals that the government's use of data-mining technology to prevent terrorism is being compromised by an almost total lack of project management or ROI analysis. Amid the public debate about the efficacy and morality of data mining as a strategy to combat terrorism, this story cuts through the FUD to provide a deep understanding of the necessity for establishing a strong business case for any technology initiative, even when the value of the goal is beyond debate.

Also in this issue is Senior Writer Susannah Patton's "Disaster!" (Page 42) about how one company kept its business and its lines of communication open in the aftermath of last summer's London terrorist bombings. The story lays out a simple, robust crisis management strategy that any CIO can and should deploy.

Both articles are critical to the CIO's understanding of the world and IT's role in their businesses, and both emphasize the need for openness and communication in the conduct of the CIO job. Without that, people really might get hurt.

And that's no joke.

**Because feelings of powerlessness lead to feelings of rage, rationality simply doesn't enter the equation.**

David Rosenbaum, Managing Editor  
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## FROM THE PUBLISHER

# Neutral on Neutrality

The key issue is structural, not political



**When I started** to pen this column on network neutrality—the notion that all content on the Internet should continue to be treated equally—I thought I was on the side of grassroots coalitions like Save the Internet and Hands off the Internet. These groups believe that Internet traffic should not be parsed based on the traffic's source, content or destination, and they predict that the Internet will become a private toll road unless Congress writes a strong definition of network neutrality into the Communications

Opportunity, Promotion and Enhancement Act of 2006 (COPE), otherwise known as HR 5252, the proposed rewrite of the Telecom Act of 1996.

What's the position of the telecom providers? They've invested billions to upgrade network infrastructure in anticipation of more bandwidth-intensive apps. In order to continue investing in the health of the Internet, and in order to have it run smoothly, they need to be able to discriminate between high-demand and low-demand traffic.

The word that sticks in the craw is "discriminate," and it has sent millions of Internet users into a frenzy of worry that a looser definition of network neutrality will turn large telecom providers into not only toll collectors but content police.

Think of your own use of the Internet. Are your digital photos and home videos consuming more bandwidth? Of course they are. What about your corporate website? Are you using streaming video yet? And what happens if the "Year of Videoconferencing" actually becomes reality? Bandwidth demand skyrockets.

I've reconsidered. I'm now neutral on the concept of network neutrality. The real issue—what's really important to address—is how woefully behind the rest of the world the United States is in pervasive, high-speed broadband deployment.

What our nation needs more than HR 5252 is a comprehensive, long-term national telecommunications infrastructure policy that lays out how our country will build that national high-speed broadband network. If we don't, our nation will not be able to COPE with the rest of world.

*Gary J. Beach*

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## READER FEEDBACK

# InBox



### Yea or Nay on SOA?

**With all** of the coverage of SOA, it was refreshing to finally read an article that brought the reader back to reality ["The Truth About SOA," June 15]. While the benefits of such an approach mimic similar ideas around object-oriented programming from years gone by, discussing concepts and actually implementing them are two different things. Anyone actually doing SOA is doing it on a small scale only.

At this time, SOA is a corporate architecture sponsored initiative. Unfortunately, tacticians responsible for implementing projects have a different problem. SOA will be implemented as small projects over time. The challenge will be if IT groups can be organized in a way to leverage and grow SOA at the same time.

**BILL KIRBY**  
Teradata

**Most of** the time, IT trade publications latch on to The Next Big Thing as the save-all, be-all for every organization on the planet. I have had it up to here with SOA articles this past year. Thank you for an article that, for once, gives a realistic picture of the true nature of technology adoption and the few companies that use it well.

**JON ERICSON**  
Roland Corp.

**SOA is** about decoupling the code that does the work from the application that needs the work done. It makes good business sense. If an application needs to get something done, why not break

it up and have a service do the work? The application can call the service. It's slightly more work at development time, but if you ever need to do that same work anywhere else in the organization, you simply reuse the service. It eliminates code redundancy and opens the door to more interconnected systems. For example, we are using services for authentication, authorization and auditing. A new application can use these proven services at almost no incremental cost. Development cost for all future development and integration efforts will be reduced.

It's all about using technology to improve the business. Every new application or feature leads to the inevitable next step. Once you have a new functionality, why not have another system, vendor or customer interact with that functionality? SOA enables the next logical step to happen faster and cheaper.

**PETER PIOTTI**  
Eclipsys Corp.

### Aim Higher for Alignment

**How unfortunate** that small and mid-market companies believe IT organizations are best only at supporting tactical efforts ["Room to Improve IT's Moves," June 15]. Business and IT leaders need to aim higher. It is possible to pursue not only tactical but strategic and innovative business-IT alignment. But IT can't innovate for the business in a vacuum, nor can the business effectively leverage technology without involvement from IT. Set higher expectations for IT and pursue those higher expectations through an alignment model that enables continual communication, education and collaboration.

**JOHN HUGHES**  
President, GrowthWave

### In Defense of Federal IT

**In the** May 15 issue of *CIO*, an otherwise thoughtful article about federal IT issues ["Federal IT Flunks Out"] was marred by a misleading, inaccurate characterization of a single, off-the-cuff remark at the retirement party of my predecessor, Dan Matthews, the then-outgoing CIO for the Department of Transportation. The reality at the department is that the CIO position reports to the secretary and has significant policy and operational responsibilities for IT across the entire department. Matthews, during his tenure, became the trusted technology adviser within the office of the secretary.

This meant that Matthews was called on to provide advice on how to maximize the success of the department's missions through the use of technology, and yes, he sometimes volunteered to personally get involved when the help desk was asked to solve problems dealing with phones. Perhaps the author was unaware that the CIO



at the department is not only responsible for computer support but also communications, which includes telephony technology issues.

I have found John Flaherty (the secretary's chief of staff whose remarks were unfairly described), Secretary Norman Mineta and other senior department officials to be strongly supportive of ensuring the ability of the departmental CIO to have broad policy impact and control. I would not have been willing to serve in the position if I thought otherwise; I doubt that Mr. Matthews would have either.

**DANIEL MINTZ**  
CIO  
Office of the Secretary  
Department of Transportation

love the obvious and literal humor in our daily activities. I laugh and smile most of the time because life itself can be so funny! I make it my mission to do two things each day: First, find someone who is struggling and give him encouragement and something to laugh at, sometimes himself; and second, when I hear something negative, make sure when I leave the tone is positive—and humor is key to doing this. I may be quirky but I can write a “sung to the tune of” in minutes, and I send them off as stress relief to coworkers.

We are all confronted with staff we can't seem to get along with, bad days, mistakes, boredom and lack of opportunity, management included. We all need humor as daily medicine. Adding it to training is a start—possibly a must! Very refreshing article, I was cheered up just reading it.

**KEVIN C. STEVENS**  
Home National Bank  
kstevens@homenational.com

**Infusing fun** into the workplace is an important facet that leaders can encourage within the group to build camaraderie and stimulate imagination. We poke fun at ourselves and each other during staff meetings and via e-mail, sharing war stories, past mistakes and group outings. I always say that people

with self-effacing humor are perceived as secure, confident and likeable. We need to show that it is OK to have fun!

**DAVID MICKELSON**  
Loomis Sayles & Co., L.P.

**A few** years ago at my company, I really needed a way to ease the stress of our fast-paced, rigorous environment, raise morale

and in general just have some “business fun”—and, of course, do it cheaply.

And so “ugly shirt day” was born. One Friday per month, consultants were encouraged to wear their ugliest (but legal!) shirts to work. It started off slowly, but gradually grew with more and more participants voluntarily suffering the teases and jibes of their coworkers. After a few months, half the employees were participating, wearing dashikis from the '60s, polyester from the '70s, tie-dye from whenever, animal prints, psychedelics, Hawaiian shirts, you name it. So many people joined the fun that we created the “Trophy of Bad Taste,” and competition spread with teams of people vying for the coveted award.

After many more months, ugly shirt day evolved to theme day, with the entire service organization decorating their team's row once a month: Hawaiian day, baseball day, American day, cheerleader day (it's amazing how many guys will dress as cheerleaders for a laugh) and many other themes. Eventually, people started bringing theme-based food. And it was all free.

The result of all this? The highest associate satisfaction scores we ever received and the highest associate retention rate—which meant we kept more talented people, and that drove our client satisfaction scores to their highest-to-date levels (along with client retention). We all won, and I'd do it again in a heartbeat.

**JONATHAN NORD-CRANE**  
Vice President  
ADP National Accounts Services

#### What Do You Think?

Send your thoughts and feedback to [letters@cio.com](mailto:letters@cio.com). Letters may be edited for length or clarity. For a link to the articles mentioned, go to [www.cio.com/archive](http://www.cio.com/archive).

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## The Best Medicine...

**I loved** your Editor's Letter “What's So Funny?” [May 15]. What you had to say can make the difference between a successful, long-term employee relationship and a failing, short-term, loss-of-investment employee relationship.

I am a huge fan of Gracie Allen humor. I



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CIO wishes to acknowledge the 2006 Editorial Advisory Board members for their ongoing guidance and reality check of the magazine's content and focus. We thank them for their generosity in sharing their insight into the world of IT leadership.

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# trendlines

EDITED BY ELANA VARON

NEW \* HOT \* UNEXPECTED



## Business Policies Put on Trial Along with Hackers

**SECURITY** What do you do when you suspect that an employee you have entrusted to keep your network running has sabotaged it for revenge or financial gain?

Brokerage UBS is the latest company to find itself in the spotlight as a result of that dilemma. In June, former UBS systems administrator Roger Duronio went on trial in Newark, N.J., for allegedly infecting UBS's network with malicious code that cost the company millions of dollars. (A verdict on federal charges of securities fraud, computer sabotage and mail fraud was pending at press time.)

During the trial, prosecutors painted Duronio as having been so irate about his less-than-desired bonus that he developed malicious code in order to cause a major disruption on UBS's network. Lawyers defending Duronio, who pled not guilty, claimed that vulnerabilities in UBS's security procedures and systems left the network open to attack.

Prosecutors alleged that after Duronio created the code in late 2001, he quit his job and banked thousands of dollars in put options on UBS, from which he

*Continued on Page 16*

## We Want Our Phones to Be Stylish (and Free Is Good Too)

**TELECOMMUNICATIONS** Style and price are the two biggest reasons why consumers choose a particular mobile phone, according to a survey by J.D. Power and Associates.

Thirty-nine percent of the 18,740 users surveyed mentioned design as a buying factor, making it the single most popular answer, according to Kirk Parsons, an analyst with J.D. Power. Getting something for nothing was the most-cited cost factor: 29 percent said they chose their phone because it was free.

Few respondents said they chose their current phone because it had a particular feature, such as a color screen, a digital camera or

speakerphone.

U.S. consumers have been slower than those in many European and Asian countries to embrace advanced mobile services and the feature-rich phones that support them. However, consumers' use of advanced features is gradually growing. Use of the most popular special feature, speakerphone, rose from 22 percent of respondents last year to 26 percent this year. Also in the latest survey, 19 percent said they use a camera phone regularly, up from 14 percent previously.

*-Stephen Lawson*



# A Future Social Security Benefit: **NO PAPERWORK**

**DATA** Future retirees may not have to file paperwork to get their Social Security checks, thanks to a government plan to convert old data into electronic form.

The U.S. Social Security Administration is looking into technology that would enable it to digitize massive amounts of data, says Kimberlee Mitchel, senior technical adviser for the agency. Millions of old records are stored in paper form; the move to electronic form will allow the agency to better track the eligibility of U.S. citizens for Social Security retirement benefits, Mitchel said at the Gartner Government Conference 2006 in June.

"We envision a future where we gather data almost transparently," she said. "When you're eligible for Social Security, the check shows up in your checking account."

The government's intelligence agencies also are looking heavily into technology that can quickly convert typewritten and even handwritten text (for example, notes handwritten in Arabic) into electronic data, said another panelist, Greg Pepus, senior director of federal outreach at In-Q-Tel, a venture capital firm funded by U.S. agencies such as the CIA. "The problem is the vast majority of data in the world isn't in databases," Pepus observes. In addition, In-Q-Tel is looking for better technologies that allow searches across multiple databases in one interface, he says. The goal is to enable targeted searches that allow intelligence analysts to spend less time looking for data and more time analyzing it.

—Grant Gross

## Hackers

Continued from Page 15

would have profited if the company's stock price declined as a result of the attack that was set to launch on March 4, 2002.

The damage caused by the malicious code impaired trading at the firm that day, hampering more than 1,000 servers and 17,000 workstations, and cost UBS about \$3 million to assess and repair.

Such cases are becoming increasingly common, according to Kristen Mathews, an attorney with Brown Raysman Millstein Felder and Steiner in New York.

While laws are maturing to handle these types of suits, she says, businesses still face challenges gathering evidence to support their cases. Another obstacle to litigation is that many companies are reluctant to enter into public lawsuits that may attract negative media attention. Before the trial began, UBS petitioned the court unsuccessfully to close the proceedings.

"It's common for a company to have to defend its own security policies and procedures at the same time they're prosecuting against a person who managed to get by those policies and procedures," Mathews says.

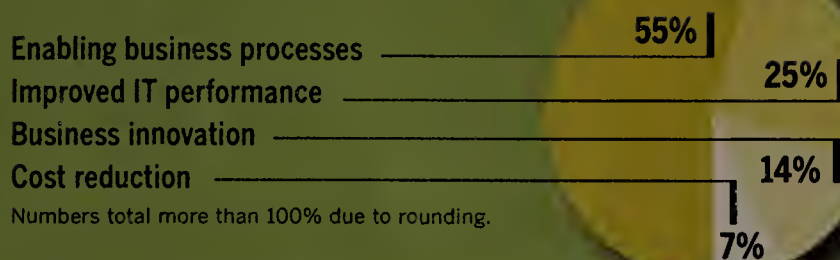
So, how can a company defend against insider attacks? To begin, companies should make an effort to protect themselves against insiders as well as external attacks, says Erik Hart, VP and information security officer for Cole Taylor Bank. "At many businesses, things put in place to protect from Internet attacks haven't been applied to internal threats," he says. And insiders have more targets, such as payroll applications.

At Cole Taylor, Hart is employing security information and event management tools from Network Intelligence to help defend against internal threats, including monitoring systems that IT administrators can't access. But Hart notes that the best prevention is to understand how information flows in your business and to continually monitor that flow. "You have to be proactive about monitoring the network on a daily basis," Hart says.

—Shelley Solheim

## Business Processes Top Spending Plans

IT budget priorities for 2007



SOURCE: CIO Tech Poll, June 2006



# Windows Vista:

## Empower Workers, minimize Risk and Cost

**D**elivering business value to the enterprise can be daunting, but meeting the challenge promises to pay dividends to the businesses that align their IT to empower their people. IT organizations are under pressure to reduce costs, keep systems up and running, and fend off security threats. In a world where corporate governance is increasingly regulated, the demands of compliance are unforgiving and absolute. And at a time when global competition is stronger than ever, quality is still king.

Windows Vista™ was designed to help customers create a People-Ready business. A People-Ready business knows that people are its most important asset, and it empowers its people to drive the business forward. When individuals realize their potential, your company realizes its potential. Microsoft Windows Vista does this by reducing costs, minimizing security threats and empowering desktop users. In recognition of today's dispersed business strategies, it enables a better connected, more collaborative and highly secure mobile workforce. By optimizing the desktop infrastructure and opening new doors to creativity, it also helps users organize and manage their information better. This means they work smarter, not harder.

Through its enhanced functionality, Windows Vista Enterprise—as well as other Windows Vista versions for home and business—is meeting the challenges and maximizing the opportunities of



delivering business value. In addition to including all the features of Windows Vista Business, it offers advanced capabilities that reduce IT costs and complexity in large organizations. Its focus on data protection, application compatibility and worldwide deployment make it highly compatible with enterprise environments.



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# Windows Vista:

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Reducing the complexity of desktop infrastructures is a rising priority among organizations of all sizes seeking to streamline their day-to-day IT operations. Toward that end, Windows Vista Enterprise—which is available to all Microsoft® Software Assurance and Microsoft Enterprise Agreement customers—is designed specifically to help realize a better return on IT investments.

It does this in many ways: Data on PCs is better protected, even if the PC is lost or stolen. Application compatibility issues with previous Windows® versions and with UNIX are mitigated, easing migration costs, and the integration of all Windows user interface languages enables a single worldwide image, dramatically lowering desktop deployment costs.

There are four pillars that make Windows Vista Enterprise a robust business operating system that large businesses can rely on for extended IT computing environments:

- Find and Use Information
- Enable the Mobile Workforce
- Improve Security and Compliance
- Optimize the Desktop Infrastructure

Says Brad Brooks, director of Windows Client consumer marketing: “Windows Vista Enterprise is about being more agile and productive, whether it is in corporate headquarters or on the road. It is also about knowing your data is available—and more secure—whenever you want it. On top of everything else, it is the lowest-cost operating system ever produced for a PC.”

### Find and Use Information

The success of a business depends on the success of its people. Making employees more productive and facilitating communication are the main reasons companies invest in information technology. Yet even with the tools available today, it's still difficult for employees to quickly find the information they need and to maximize the power of their PC. Windows Vista is designed as a People-Ready solution so they can easily find, share and use information.

First and foremost, Windows Vista provides employees with a high-performing, reliable PC that is ready when they are. Technologies like SuperFetch™ can increase the performance of the computer by enabling applications and files to load much faster.

IDC estimates that companies may face between \$9,000 and \$14,000 in lost productivity per knowledge worker per year, as people try to find or re-create mis-

placed information. The fast, integrated desktop search in Windows Vista makes it easy for users to maximize the information stored on their computers and across the enterprise. Unlike add-on desktop search products that require users to go into a separate tool to search data, with Windows Vista desktop, search is integrated throughout the operating system—in the start menu, control panel and document folders—making it easy to find the answers they seek.

“Recently, I talked with a customer who said if I could save his heavy IT users 30 minutes a week, he would sign up for Windows Vista Enterprise the next day,” Brooks states. “I showed him how quickly he could find information via the integrated search functionality, and how he could create virtual searches and save them so they could recapture information more quickly. When I told him about the faster boot-up time and how quickly he could move from a cold start or sleep state to full operations, he realized that his users could easily save more than 30 minutes per week.”

### Enable the Mobile Workforce

Laptop and tablet PC users will get the most immediate benefits from Windows Vista. Research from both Gartner and Forrester Research concluded that mobile computers can improve employee productivity and generate a positive return on their investments. Given their benefits, it is no surprise that laptop sales are outpacing traditional desktop PC sales.

However, support for mobile users in the enterprise today adds to the complexity of IT environments. Additionally, laptops pose unique security risks. New tools in Windows Vista can help organizations realize the benefits of mobile computing—along with reduced costs and more security—enabling the mobile workforce to be more productive and better connected.

To help address the security risks of mobile computing, Windows Vista includes the latest wireless security protocols so users can connect to Wi-Fi networks more securely. Network Access Protection, which is used with the Windows Server™ “Longhorn” infrastructure, ensures that computers are in a more secure state before they are allowed to reconnect to the network, preventing them from spreading a virus inside a company's network perimeter.

BitLocker™ Drive Encryption is a data protection feature available in Windows Vista Enterprise and Windows Vista Ultimate for client computers, and in Windows Server Longhorn. It provides full-volume encryption and



# Windows Vista:

## WHITE PAPER

boot integrity checking to help ensure that the data on a company computer stays confidential, even if the PC is lost, stolen or decommissioned.

"The mobile workforce is taking mission-critical data on the road, and that data needs to be protected," Brooks says. "We have added security protocols to accomplish that task. With BitLocker Drive Encryption, if a PC is lost or stolen, nobody can access its data without the proper encryption key. In addition, it is possible to quickly move from a computing environment to a presentation requirement that is not plagued by pop-ups or e-mail flashes."

### Improve Security and Compliance

Unfortunately, in today's digital world, computers are an increasingly attractive target for criminals hoping to steal information or to harm businesses. Financial losses due to lost or unauthorized access to data are on the rise. Sophisticated social engineering attacks can trick employees into revealing confidential information. In addition, new government regulations require strict compliance with security and data protection policies. To help organizations conform with to these policies, Windows Vista provides multiple layers of protection.

Microsoft developers are among the earliest groups to benefit from this enhanced protection. Because Windows Vista is the first desktop operating system released since the Microsoft Trustworthy Computing Initiative began, Microsoft developers now receive ongoing security training, and Microsoft hires leading security experts to perform thorough testing. The end results are a fundamentally more secure platform that is harder to exploit, and a reduced need for security updates.

In order to maintain a more secure, compliant environment, it is important to identify who is attempting to use the computer, and then to control what resources they can access. Windows Vista makes identification and control much easier by having built-in support for strong user authentication. Additionally, the presence of granular event logging, auditing and tracking for security make it easier for companies to achieve compliance with both internal policies and government regulations.

To control access, companies face a difficult trade-off: Do they give users full administrator permission and accept the security and compliance risks? Or do they limit the privileges of users and face lower application compatibility and user productivity? Windows Vista User Account Control helps make the choice easy by giving users the power to do more things on their own, with higher application compatibility than previous versions

of Windows, while reducing the attack surface area of the company's PCs.

Says Brooks: "The user account controls in Windows Vista Enterprise are robust enough to prevent malicious software from installing itself in the background. By having these user account controls, we have created a much more secure environment. We have also strengthened Internet Explorer® 7, so that when it runs in protective mode, it will reject unwanted applications and minimize the risk of users inadvertently installing malicious software."

### Optimize the Desktop Infrastructure

Managing desktop images is expensive today because IT departments have to maintain and test separate OS images for each language and computer hardware type in their companies. Some firms may have as many as one full-time IT professional to support each image. For example, Gartner estimates that annual IT labor costs range from \$250 to \$800 per PC, depending on a company's level of IT maturity.

With the Windows Vista new imaging technology, organizations can deploy a single OS image to different types of computer hardware and machines in different languages. The new deployment tools not only ease the migration to Windows Vista, but also provide ongoing savings of up to 25 percent because the new images are easier to maintain, update and deploy to new users.

To facilitate the initial Windows Vista migration, Microsoft is providing the Application Compatibility Toolkit (ACT) version 5.0. The early availability of this tool, as well as the online community Microsoft is building for customers, partners and vendors to share their testing results, will significantly ease application compatibility testing for enterprise customers. This leads to diminished support costs.

Wherever possible, Windows Vista will "heal" itself, avoiding user interruptions and unnecessary help desk calls. If Windows cannot fix the problem automatically, built-in diagnostics log when a system error takes place and can walk the user through problem resolution. For instance, the new Startup Repair Tool can automatically repair even unbootable systems. If users do need support, Windows Vista also includes new tools such as the Reliability and Performance Monitor, improved Remote Assistance, and the new Event Viewer, all of which enable helpdesk staff to get users up and running more quickly.

Brooks points to the cost-cutting opportunities offered by Windows Vista Enterprise. "In addition to saving



# Windows Vista:

## WHITE PAPER

money by deploying a single worldwide image, the optimized desktop infrastructure of Windows Vista Enterprise minimizes costs by minimizing migration times. It further employs desktop deployment tools that make it easy to convert from Windows XP without sending your IT staff around to touch every PC on every desktop."

### Enhanced Enterprise Capabilities

Advanced Application Compatibility Solutions are a critical component of Windows Vista. Among them is Virtual PC Express, which provides a safety net for operating system migration by making it possible to run a legacy operating system and legacy applications simultaneously with Windows Vista. In effect, this enables users to run legacy applications in a virtual machine. Tools that increase interoperability with UNIX applications are also provided as part of the Subsystem for UNIX-based Applications (SUA). This capability makes Windows-based workstations more versatile by allowing users to run UNIX-based applications on a Windows Vista Enterprise-based computer.

The Multilingual UI and availability of all Worldwide Language Packs reduce image management and support costs by managing a single worldwide desktop image that lets businesses deploy desktops with any user interface language. It also enables users to switch between languages as easily as logging on.

Microsoft Software Assurance is a maintenance offer that helps organizations get the most from Microsoft software through a broad range of benefits. From deployment planning and staff training to product support and software upgrades, Software Assurance benefits help customers increase worker productivity, accelerate organizational performance and realize a greater return on their software investments.

### Getting Started

There are already thousands of customers testing beta versions. Microsoft recently released Windows Vista Beta 2 and began the Customer Preview Program, a program by which customers get access to Beta & RC bits and key evaluation resources. Millions more customers are expected to install and evaluate the operating system as they get ready for the release of Windows Vista.

There are a number of things that companies can do now so they will be ready to deploy Windows Vista as soon as possible after it is released.

- Download the Windows Vista Beta 2 from MSDN® or TechNet to begin your evaluation and deployment

planning. <http://www.microsoft.com/windowsvista/getready/preview.mspx>

- Start compatibility testing using the tools in the Application Compatibility Toolkit (Version 5). This will help firms catch many of the compatibility issues in migrating to Windows Vista and give them a start on their testing processes. <http://www.microsoft.com/technet/prodtechnol/windows/appcompatibility/default.mspx#EOB>
- Download and use the Windows Vista Deployment Tools which make it possible to see easier ways to capture, manage, and deploy Windows Vista images. <http://www.microsoft.com/technet/windowsvista/deploy/default.mspx>
- Participate with their account teams in a Rapid Economic Justification study so they can measure the value that Windows Vista will bring to their businesses <http://www.microsoft.com/business/enterprise/value.mspx>
- Provide feedback to Microsoft about how Windows Vista meets the needs of their organizations. <http://www.microsoft.com/windowsvista/sentiments/default.mspx>

### Conclusion

Windows Vista Enterprise is designed to help large, global organizations and organizations with highly complex IT infrastructures significantly lower IT costs and risks. In addition to all the features available in Windows Vista Business, Windows Vista Enterprise provides higher levels of data protection using hardware-based encryption technology. It includes tools to mitigate application compatibility issues and enables organizations to standardize by using a single worldwide deployment image. Available as a benefit to organizations with PCs covered by Microsoft Software Assurance or a Microsoft Enterprise Agreement, Windows Vista Enterprise is a People-Ready operating system that optimizes the performance and productivity of users while helping organizations realize a higher return on their IT investments.

"Windows Vista Enterprise was designed as a People-Ready operating system from the ground up to accommodate how people use the PC on an everyday basis," Brooks says. "It creates a more agile, customer-responsive organization that increases power and productivity while reducing the cost of ownership." ■

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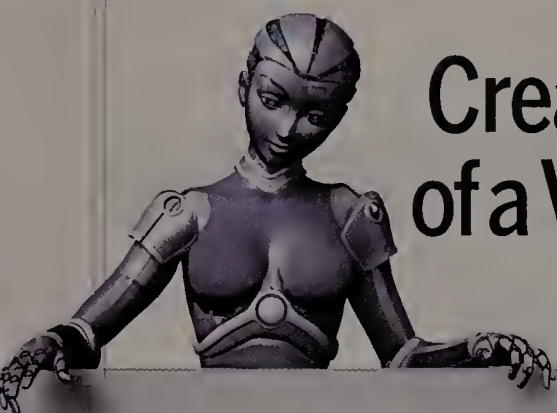
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## Creatures of a Virtual World

**COMPUTER SIMULATION** Researchers studying artificial intelligence are creating millions of simulated humans in order to observe how they interact and evolve.

These software beings don't have names, but they do have distinct virtual characteristics, including gender, life expectancy, size and metabolism. Their traits will be passed on as they reproduce, but the beings will also be able to learn and gain new characteristics.

So far, thousands of artificial beings have been created in a single computer, but the goal is to create a cluster of computers to host potentially millions of them, says Gus Eiben, the project leader and a professor at Vrije Universiteit in the Netherlands.

The results of the research could be applied to several fields. Sociologists, anthropologists and politicians could use it to simulate reactions to events such as elections. Game developers could use the findings to create more intelligent characters that can learn and adapt. "Giving intelligence to them would make the games more challenging," Eiben says.

Computers randomly generate the beings, groups of which live in worlds that the researchers create to present them with different challenges. Built-in algorithms allow the beings to create language, work together, and distinguish between friend and foe. Researchers will discover how the beings learn and interact by studying the choices they make. At least at first, the researchers aren't likely to develop a visualization tool that would allow observers to see figures interacting on a computer screen. Instead, graphs will plot details, like the number of beings, which over time will allow the researchers to follow their activities, including reproduction and death.

The project, which began in 2004, is being funded with a \$2 million grant from the European Union to five universities.

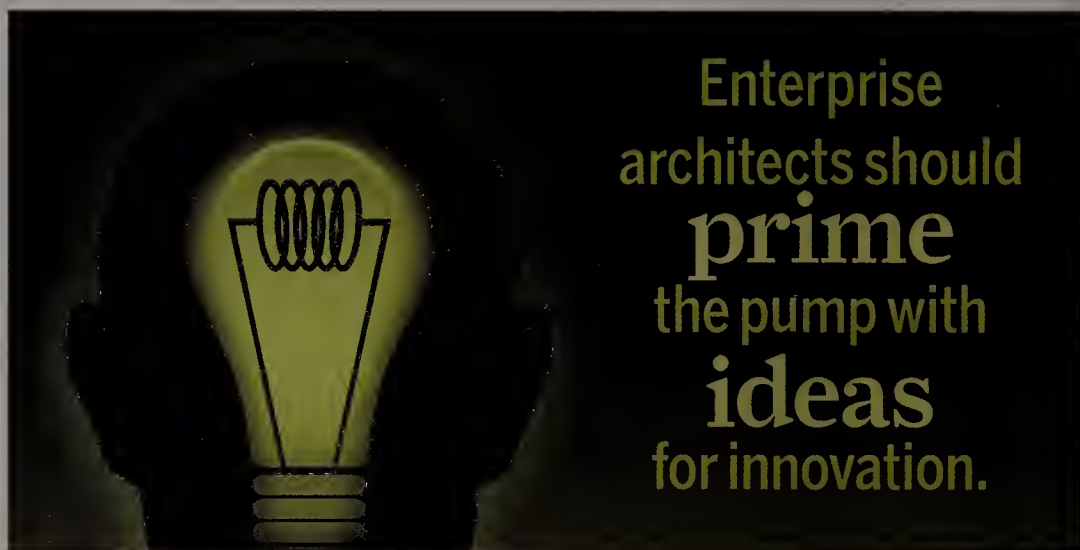
—Nancy Gohring

## How to Align IT with Business Innovation

**MANAGEMENT REPORT** Unleashing the innovative power of the IT organization is a goal for many CIOs. But how is it supposed to happen? According to a recent study by Forrester Research, the solution could be to let the enterprise architects play a key role as coordinators and facilitators for a company's innovation initiatives.

The architects are the people within the IT organization who are best suited for the mission, says Forrester analyst Alex Cullen, because they have an overall view of the company and are plugged into business strategy. And because they are technology generalists, they are better at seeing—and dealing with—new things than more specialized IT managers.

The enterprise architecture group's role is mainly as a facilitator: to build an innovation team, says Cullen. Participants in this so-called innovation network should come from all over the company and include both business and IT people. The team's role is to behave as a funnel, channeling ideas from a variety of sources, including



Enterprise architects should prime the pump with ideas for innovation.

technical publications, other companies, academia or the consumer market.

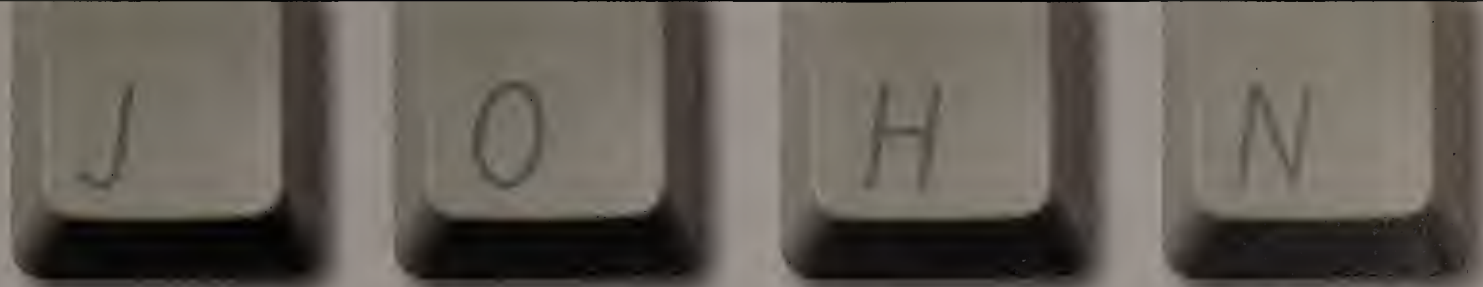
"What happens in the beginning is that the people in charge of the process will bring in a lot of ideas themselves that they find in different places," Cullen observes. "If it goes well, other people will be encouraged and do the same thing," but in the beginning, the enterprise architects should prime the pump.

Promising ideas need to be bounced against potential business uses, he adds. If a company decides to pursue them, then the enterprise architecture group's role is to deliver the technologies and IT services necessary to execute the ideas. For example, a sales management organization might be alerted to the potential for podcasting as the means for continuous sales training, but it will need a technical infrastructure and the production of training materials to turn the idea into reality.

For Cullen, the bottom line is that IT needs to contribute to innovation equally with business leaders. Letting the enterprise architects take a leadership role is a first step toward aligning IT with the business innovation process.

—Alexandra Heymowska





# How Your "Fist" Can Talk

**AUTHENTICATION** What's the best way to ID a DJ? This is a question that John Heaven thought long and hard about three years ago, when his company, Musicrypt, was trying to create a better way for record companies to get their music into the hands of the reviewers and radio stations.

In the past this had been done by mailing thousands of CDs and press kits, but Heaven knew that online distribution would be faster and less expensive. That's when some little-known research, begun by Allied intelligence services during World War II, saved the day.

During the war, the Allies discovered they could track German telegraph operators by identifying each operator's unique style of typing code, something known as "the fist of the sender." Forty years later, researchers took this discovery to the computer keyboard and found that individuals could also be identified by the rhythm of their typing.

The technology for making these identifications eventually landed in the hands of the company BioPassword. After taking about nine samples of an eight- to 16-keystroke password,

the company's software is able to identify the "fist" of the typist about 98 percent of the time. Musicrypt decided to use the software to authenticate anyone who accesses its tunes.

Now BioPassword hopes to make inroads with financial services companies, capitalizing on growing fears of fraud and identity theft, as well as federal guidelines that call for banks to beef up their online authentication techniques by year's end.

The software is being used by a number of smaller regional banks, including Washington State's CharterBank, San Antonio City Employees Federal Credit Union and the Automotive Federal Credit Union in Ann Arbor, Mich.

Nevertheless, the company has to prove itself as a credible alternative to more established competitors such as RSA Security, says Andrew Jaquith, senior analyst with Yankee Group Research. "I think they're going to have some challenges getting over the credibility gap," he says. "But it has the benefit of being simple, and simple is good."

—Robert McMillan

TRENDLINES

## WHEN THE NEW JOB ISN'T IN I.T.: Tips for Making the Transition

**ON THE MOVE** CIOs moving into roles outside of IT can rest easy during the transition knowing that in their new positions they'll rely on some of the same skills that made them successful CIOs: their ability to think strategically and to attract and retain talented individuals to carry out their plans.

Among the CIOs who migrated out of IT this spring:

- **Rudi Huber**, who as Alcoa's new European president now coordinates HR, legal, media and government affairs operations in Europe and Russia.
- **Otis Sawyer**, who now oversees IT, transportation, logistics and fabric procurement as La-Z-Boy's senior VP of corporate operations.
- **Bobby Burg**, who was promoted

to senior VP of operations and supply chain strategy at Southern Wine & Spirits.

• **Mike Thyken**, who was appointed Select Comfort's VP of process development.

• **Rhonda Basset Spiers**, former CIO of software maker BEA, who is now the COO of home entertainment systems provider Control4.

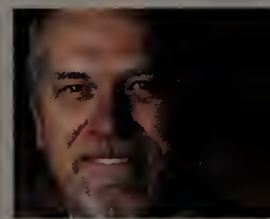
Even though CIOs taking on non-IT roles can carry over their skills, the transition can be bumpy. Asiff Hirji, the former CIO, now COO, of TD Ameritrade, says one of the biggest challenges in the first few months of a non-IT job can be the temptation to stay involved in old projects and weigh in on technology decisions. Accordingly, he advises CIOs

to distance themselves from their IT organizations.

When former CIOs remain involved in the tactical aspects of IT, colleagues may not take them seriously in their new position, he says. Meanwhile, the distractions from their new responsibilities may cause them to fail.

To make it easier to let go of the IT reins, Hirji recommends appointing someone you trust to the position you're vacating and handing full authority for IT decisions to that person—even when, as is the case with Hirji, the new CIO reports to you. "If you do the right thing in picking your own successor, technology will take care of itself so you can stop worrying about it," he says.

—Meridith Levinson



**Rudi Huber**



**Mike Thyken**

**CIO.COM** Read Meridith Levinson's **MOVERS AND SHAKERS** blog for the latest moves. Find it at [blogs.cio.com](http://blogs.cio.com).





## Why Change Hurts

**LEADERSHIP** Change hurts. That's not a metaphorical statement. Change—the hope of all innovative corporate leaders—induces a physiological reaction in the brain that results in stress, discomfort and pain.

Scientists have known that for years. The news, according to UCLA research psychiatrist Jeffrey M. Schwartz and leadership guru David Rock, is that by focusing attention on certain insights and ideas, humans—and even large, inertia-anguished companies—can combat this physical resistance to change.

When a person's expectations are challenged, the brain fires a distress signal. But say an employee comes up with a way to cope with a new demand. Then the Aha!—the moment of insight—creates enough positive energy in the brain to counter the negative feelings about change. In leadership lingo, if employees are going to embrace change, they need to own it.

A leader's role, according to Rock, is to help facilitate insight across the organization. But that's not all. Individual brains are shaped by behavior. That means that in the long run, leaders who make a habit out of change can undo the hardwiring that causes brains to fight it. "If you can create in your organization a powerful expectation of change, then you can begin to create a counterbalance to these physiological reactions," Schwartz says.

The Rock and Schwartz approach has implications for time-honored leadership techniques:

- Incentives—carrots and sticks—are ineffective at an individual level.
- Sharing your own solutions and insights with employees has limited influence on their behavior.
- Constructive criticism tends to focus too heavily on problems. Instead, Rock recommends "constructive creationism": asking employees how they might develop new, improved habits and how you can help them.

"Once you learn these principles, any other way of communicating is annoying," says Rock. "You can see when you're fighting the brain instead of harnessing its energy."

—Samar Farah

## IT Laughs @ Itself

**CULTURE** A British TV show has taken the best and worst of IT administrator stereotypes and packed them into a clever, side-splitting comedy.

*The IT Crowd* features Jen, who has been appointed as a supervisor in her company's IT department but knows nothing about computers. When asked during her job interview what she knows about IT, she says, "You know, e-mail. Sending e-mail. Receiving e-mail. Deleting e-mail. Um, I could go on."

But Jen's social skills are sorely needed to raise the profiles of Moss and Roy, two hopelessly geeky IT administrators banished to a dingy basement office strewn with hardware detritus. Roy arrogantly advises computer-challenged employees who call him with a problem to turn their computers off and on again, which usually allows him to go back to reading his comic books.

Coworker Moss is a stiff-spined nerd with thick glasses, whose deft technical knowledge but nonexistent social skills landed him a desk next to Roy's. When Jen makes the mistake in one episode of asking Moss a techie query, Moss's answer is humorously dubbed over with the sound of static as Jen blankly stares.

And then there's Richmond the Goth, whose Marilyn Manson-like attire sent his career path askew. He is now in charge of a mysterious bank of blinking lights that presumably power their building's network.

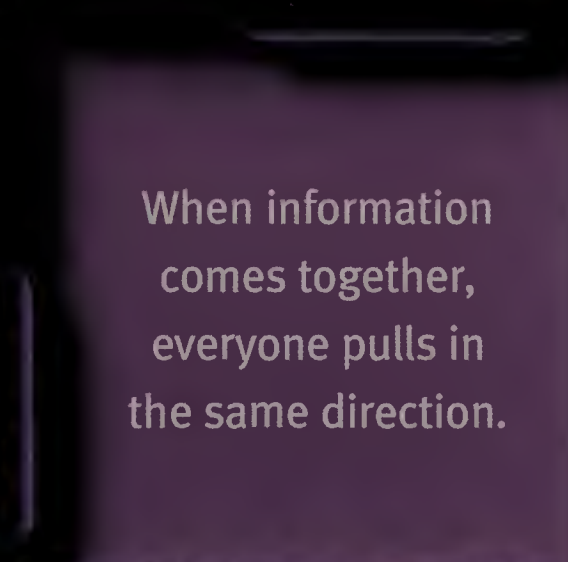
The show's creators have sprinkled surprising hints of cool for street-geek cred, such as the stickers on the IT office's door from the online rights advocacy group Electronic Frontier Foundation and the passive-aggressive slogans on Roy's technology-themed T-shirts. *The IT Crowd* pounds on nerd stereotypes—Roy stumbles and bleeds in several episodes, while Moss's odd rigidity renders him impotent in normal conversation—but their high comic moments melt any degrading perceptions of their jobs.

The show's successful six-episode run last fall has led Britain's Channel 4, a publicly owned nonprofit station, to commission another season. Those shows are likely to air in 2007 in the United Kingdom.

—Jeremy Kirk



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ESSENTIAL

FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS

# technology



Storage needs increase as companies grow. But which competing technology should you bet on?

## Data Looks for a Home

BY CINDY WAXER

**STORAGE** | For a company whose bread and butter is producing crude oil, Newfield Exploration's storage environment was fast running out of gas. Saddled with a mix of disparate systems, platforms and applications, the \$1.7 billion Houston company's storage environment was "a mess," according to Mark Spicer, Newfield's vice president of IT. Servers had to be rebooted twice a day to ensure availability, and keeping tabs on an overburdened architecture was draining scarce IT resources. With a workforce growing at an annual rate of 20 percent, Newfield Exploration was in desperate need of greater storage capacity.

"We were just starting to reach critical mass, so we really needed to overhaul the whole storage system to plan for growth," says Spicer.

Newfield Exploration could have opted for age-old fibre channel technology. Instead, in early 2003 the company turned to NetApp for its iSCSI-based storage area network. Unlike with traditional network storage protocols such as fibre channel, operating iSCSI (Internet Small Computer System Interface) requires only an Ethernet interface or any other TCP/IP-capable network. Gone is the pricey equipment and specialized hardware

knowledge often demanded of a fibre channel (FC) SAN deployment. With iSCSI, the promise is that companies can achieve a low-cost and easy-to-maintain centralization of storage.

While it was risky to take a chance on a relatively new storage solution such as iSCSI, Spicer says the decision has paid off. By implementing NetApp iSCSI connectivity to store Windows application data such as Exchange stores, Web stores and SQL Server databases, Newfield Exploration has improved performance by 20 percent, leveraged its existing Ethernet infrastructure and greatly expanded storage capacity without having to add personnel—a cost savings of at least \$85,000 a year.

Newfield Exploration is just one of many midsize companies gradually making the move to iSCSI. Businesses have long relied on FC-SANs to offer rapid data transfer rates, enormous bandwidth and highly

bus adapter and drivers, all it takes to connect a server to an iSCSI network is a gigabit Ethernet network interface card. Such ease-of-use is particularly attractive to today's midsize businesses with limited IT resources and tight budgets. And where FC-SANs often demand a hefty investment in storage administrators, most IT professionals already possess a considerable knowledge of Ethernet technology.

"iSCSI has emerged as a completely legitimate mainstream alternative to fibre channel," says John Sloan, a senior research analyst for Info-Tech Research Group. According to a recent Info-Tech study, while spending on FC-SANs is virtually nonexistent among enterprises with fewer than 100 employees, in enterprises with 100 to 500 employees, FC and iSCSI are receiving equal customer attention.

Despite this increasing popularity, iSCSI has been surrounded by its fair

## The arrival of iSCSI has heralded a user-friendly—and considerably cheaper—alternative to fibre channel SANs for midsize and cash-strapped businesses.

predictable performance for mission-critical applications. Such peak performance is especially critical to companies that depend on applications for processing sensitive financial information and confidential customer data. But the arrival of iSCSI has heralded a user-friendly—and considerably cheaper—alternative for midsize and cash-strapped businesses. And vendors such as EMC, EqualLogic, Hewlett-Packard and NetApp, are fast catching on to the trend, making iSCSI a key part of their storage solution portfolios.

### iSCSI Pros and Cons

The allure of iSCSI is easy to understand. Whereas an FC-SAN deployment calls for the installation of a high-priced host

share of controversy. For starters, promises of immediate cost savings have often not been realized, according to Robert Passmore, VP of research at Gartner. "CIOs need to understand that the savings [of iSCSI] have been exaggerated," he says. "Therefore, it's important to look at the trade-offs and understand the positives as well as the negatives."

Chief among these negatives is the security risk iSCSI can introduce to the enterprise. In the case of FC-SANs, the cables are inside a data center that only employees can access. And even an ill-intentioned employee would have a tough time finding the tools he would need to hack into fibre channel. But iSCSI is another story. "Anybody with a PC made in the last 10

## How to Secure an iSCSI SAN

### Answer: Unplug it

For all its promises of user-friendliness and low-cost storage, a storage area network based on Internet Small Computer System Interface (iSCSI) can present some daunting security risks to today's mid-market companies. After all, iSCSI is essentially a combination of two protocols—TCP/IP and SCSI—neither of which possesses built-in security features. Vendors have taken steps to deliver CIOs greater peace of mind by introducing password authorization provisions and optional protection mechanisms such as IPSec that act as a network layer, promising the safe transmission of data over unprotected networks (such as the Internet). But when it comes to guaranteed safety, Gartner analyst Robert Passmore says, "The answer is isolation."

By unplugging an iSCSI-based SAN's Internet cable, a company can isolate iSCSI traffic on a separate network and prevent unauthorized users from accessing sensitive information. After all, says Passmore, "There's no fundamental reason to connect iSCSI to a public network."

—C.W.

years and some shareware can tap in and see exactly what's going on over that network," Passmore warns.

### The Fibres that Bind

The need for a reliably secure storage system drove Capital Region Orthopaedic Group to select fibre channel. Members of the 24-physician practice based in Albany, N.Y., handle nearly 90,000 office visits each year and upward of 5,000 surgical



cases. In early 2002, Capital Region Orthopaedic opted to move from paper charts and film-based X-rays to an all-electronic health records system and a digital picture archiving and communications system, or PACS. While the transition was intended to help Capital's physicians electronically access everything from exam notes to digital X-ray images, the size of the required database posed a problem. Each digital X-ray comprises several megabytes of data, and Capital Region Orthopaedic produces thousands of X-rays each year.

"Once we looked at the level of needs and projections for storage necessities, we knew that we needed to move to a SAN," says Raymond DeCrescente, Capital Region Orthopaedic's CTO.

To support the PACS application, Capital Region Orthopaedic traded in its single-server storage system for an FC-SAN from HP. This FC-SAN can be scaled up to 12 terabytes, providing instantaneous access to the past year's images. It took three weeks to deploy the new storage system, which represents a \$480,000 financial investment, including servers, storage and fibre channel. Although far from cheap, it's an expenditure that

In fact, for all the strides made by iSCSI vendors, fibre channel isn't likely to be displaced by its more cost-effective counterpart anytime soon. According to Gartner, worldwide revenue for iSCSI-based solutions is expected to grow from less than \$300 million in 2006 to nearly \$1.6 billion in 2009. But while combined iSCSI and fibre channel sales are projected to reach \$20 billion in 2009, fibre channel will represent a whopping 79 percent of that.

What's more, although iSCSI has typically been cheaper to acquire, fibre channel vendors are now driving down their costs with easy-to-install, out-of-the-box offerings.

"Everybody is pushing to extend SAN technology into the midsize and smaller [market] so vendors are being more cost-conscious. You just can't get away with charging six figures for storage anymore," says Sloan of Info-Tech.

### Why You Don't Have to Choose

The rising costs of iSCSI is why analysts recommend looking beyond the bottom line when selecting a storage solution. While it's easy to be seduced by a vendor's

"While fibre channel is more expensive, it's much more robust, more secure and less susceptible to some of the problems that you can have with iSCSI."

—CTO Raymond DeCrescente, Capital Region Orthopaedic

DeCrescente says guarantees the growing practice will have a secure solution and the HIPAA-required protection of confidential medical records.

"While [fibre channel] is more expensive, it's much more robust, more secure and less susceptible to some of the problems that you can have with iSCSI," says DeCrescente.

promise of instant savings, companies need to recognize the respective limitations of both fibre channel and iSCSI. For example, an iSCSI deployment may cost a fraction of the price of a fibre channel installation, but those savings can easily be offset by the need for additional security measures. (For more on security implications, see "How to Secure an iSCSI SAN," Page 23.)

Combined  
worldwide  
revenue  
for iSCSI  
and fibre  
channel  
sales are  
expected  
to reach  
**\$20 billion**  
in 2009.

SOURCE: Gartner

As it turns out, some companies are refusing to pick sides and instead are opting for combining both in a hybrid storage model. Growing midsize companies with an iSCSI solution already in place can easily add fibre channel onto the infrastructure as the need for additional capacity arises. In turn, enterprises with large investments in fibre channel can opt to connect remote servers into the networks using iSCSI.

"The key thing is that for many storage applications in the small to midsize enterprise space, iSCSI versus fibre channel is irrelevant," says Sloan. "What matters is that you get the best storage utilization and management features for your dollar." **CIO**

Cindy Waxer is a Canada-based freelancer. Send feedback to [drosenbaum@cio.com](mailto:drosenbaum@cio.com).

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# Breaking Away

Former CIOs offer advice on how to leave the comforts (and constraints) of a steady job and make your fortune as a freewheeling consultant



Perhaps it was at the end of a tough week of office politics. Or just after a business head changed the specs on a major new build. At some point as CIO, you must have thought to yourself, "Maybe it's time to try consulting."

As clients, we often see consultants as a necessary evil. But from time to time, we have all imagined that life on the other side must be sweet. No politics, no tedium, no staff evaluations. Just loads and loads of billable hours.

None of the CIOs-turned-consultants I spoke with describe their careers in such idealistic terms but they do acknowledge that they have reaped benefits from making the move. With their experiences as a guide, here are three models for pursuing the consulting track.

## 1. Buy a Firm

Months before Geoffrey Hayden vacated his post as CIO of Jacuzzi Brands, he knew his next job would be consulting. In August 2005, he purchased Bracken Consulting, which provides IT services to hospitality companies. By the time he left Jacuzzi in March 2006, he had changed the firm's name to Acxential Business Solutions, assumed the position of president and built a business plan to double revenue within 12 months. Hayden's advice?

**Buy, don't build.** Hayden had recently moved his family to Texas and had neither a great local Rolodex nor the flexibility to relocate. "If you don't have enough strong contacts to create a customer base," he says, "buy an established firm."

**Network while you're CIO.** "Start building up your networks before you need them," says Hayden. "Join regional CIO



associations and business networking groups before you set up shop."

## 2. Join a Firm

After four years as CIO of Equity Office Properties, a Fortune 500 real estate company, Scott Morey needed a change. His turnaround effort at Equity was complete. He asked himself, "What am I? A technology person or a real estate person?" Real estate won out, so he took a managing director position at RealFoundations, a small management consultancy focused on real estate and property company operations. "At the large firms, I would be more narrowly focused," Morey says. "The smaller boutique firm gives me the flexibility to start new service lines, to rebrand myself as an operations person, and a tremendous diversity of experiences and learning." He learned three lessons from his experience.

**Do a gut check.** Ask yourself a few key questions before taking on a consulting role. Are you prepared to travel? To constantly recreate yourself? Can you handle rejection?

**Learn to listen.** "CIOs who fail in the conversion into consulting haven't modified their approach," says Morey. "They're not a leader, but an adviser and a coach. Listening is as important to selling your consulting services as it is to being successful once you're engaged in the work."

**Draw from multicompany experience.** "If you rely solely on your last experience as CIO, you risk alienating your client," says Morey. "If you come in and say, 'I come from the best and we can fix it for you,' you will appear too narrow in your expertise."

## 3. Go the Independent Route

While Patricia Wallington was CIO of Xerox, her husband became critically ill and she wanted more personal flexibility to accommodate his needs. Consulting was a path toward a greater choice of work assignments and more control over her schedule. Wallington is an independent consultant, responsible for her own business development and project execution. She offers several pieces of advice.

**Be focused, but not too focused.** "One of my clients had some troubled projects, so project management was what I offered them," says Wallington, founder of CIO Associates. "Eventually, they asked me to do some leadership coaching. That service has become a core of my business." If you plan to do only what you were hired to do, you may miss out on new ways to evolve your business.

**Don't be a one-client act.** Once you've started to do good work for a client, that client may offer an endless array of projects. "That's a trap," warns Wallington. "Don't be so consumed by a company that your future becomes dependent on it."

The debate rages on about how much consulting is the right amount to have on your résumé. For those of you who have made the switch, what words of wisdom can you offer?

## The Last Word

Martha Heller responds to readers' comments

**A hearty thanks** to all of the CIOs-turned-consultants who posted in response to this column. James Huguelet, president of the Huguelet Group, offered a useful list of questions any CIO ought to ask before making the move:

Will I be as comfortable taking directions and accepting decisions as I was giving directions and making decisions?

Will I be fulfilled operating at a lower level of responsibility and involvement than when I was a CIO?

Will I enjoy rolling up my sleeves and being a "doer" (creating deliverables like documents), when I was always a "leader" (deciding what deliverables were needed)?

If you can answer "yes" to these questions and those posted in the column, you may well enjoy a successful turn as a consultant. But that still begs the question: Is there a career benefit to consulting?

Like the response to most good questions, the answer is: "It depends." If what you seek long term in your career is a new senior-level executive position where you are effective, challenged, fulfilled and successful, consulting can be a powerful transitional move. But if you do not treat it strategically, consulting may not help you achieve this goal.

Let's say you know that you want to be the CIO of a consumer packaged-goods company. Make a list of target

companies, then join a consultancy that will expose you to senior executives at these businesses. When you have secured a consulting engagement with

### Join the Conversation

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one of your targets, build up your internal contacts. Once you have built solid relationships, you will be privy to executive-level changes and decision-making processes, which will help as you pursue employment. Plus, as a valued consultant, you will have the credibility to set you apart from other candidates.

If you treat your time in consulting strategically, you will emerge with skills, experiences and contacts that are finely tuned to your next executive position. But if you don't, all you'll have to show for it is a big stack of frequent flier miles. **CIO**

Martha Heller is managing director of the IT Leadership Practice at the Z Resource Group, an executive recruiting firm in Boston. Reach her at [mheller@zrgroup.com](mailto:mheller@zrgroup.com).





# No Marketing, No Sale

People believe that if they work hard and do the right thing, others will notice and reward them. But in the real world, you have to beat your own drum. **BY LARRY BONFANTE**



**M**any IT executives frown at the thought of marketing IT internally. It conjures up visions of loud-mouths delivering sales pitches—the kind of people we’d prefer to avoid. If we wanted to get into marketing, we would have gotten into...well...marketing. But what marketing is really about is educating people about something that you’re passionate about. For instance, some of you probably spend hours regaling your friends about your tennis game. As CIO of the United States Tennis Association (USTA), I’d like to thank you for marketing our sport!

Many of us grew up believing that if we worked hard and did the right things, people would notice and reward us. Unfortunately, things don’t always work out that way. The executives and board members who are critical to our jobs have countless issues being thrown at them all the time. Unless we market our ideas to them—communicate and educate—we will never capture their attention, attention that we need to succeed.

## Why Names Are Important

Marketing is never more important than when you’re trying to turn around an underperforming IT organization. When I began my tenure at the USTA, our IT team had a bad reputation and no credibility. After I listened to my clients to understand what they perceived the problems to be, my first step was to develop and market an action plan to address them. I named this plan “Operation CPR.” The acronym stood for the three areas our clients had identified as shortcomings: communications, project delivery and responsiveness. Calling it an “operation” helped my team understand that we were in a battle, and CPR reminded them about the areas in which we needed to improve. (It’s not only your clients to



whom you need to market but your own people too. What your staff thinks, feels and says to others in the quiet moments when you are not around will have a more profound impact on how people see IT than the messages you deliver from the pulpit.)

By giving the project a name and a brand, we made it clear to our clients that we were taking their complaints to heart. (I knew I had my work cut out for me when at my first board presentation a member told me that CPR wouldn't work "because the patient was already dead.")

## Getting the Message Out

When marketing, it is important that you are consistent and constant in the delivery of your message. We use every vehicle we can think of to drill home our focus on communication, project delivery and responsiveness. We developed an IT scorecard, administered twice a year, with almost all the metrics we track tied back to those three major themes. We present the results (the good, the bad and the ugly) as well as all the comments we receive at our IT committee sessions at USTA's annual and semiannual meetings. This audience includes board members, committee chairs and key executives from our 17 section offices. This level of transparency accomplishes two objectives. It allows me to articulate (i.e., market) our progress and successes in a large public forum, and perhaps more importantly, this level of candor lets people know that I can be trusted.

At these meetings we also host an IT "trade show." This provides our constituency the opportunity to touch and see new IT systems as well as mock-ups of innovations we hope to deliver in the next 12 to 24 months. It also helps us drum up financial support and sponsorship. We publish a monthly newsletter that highlights our progress on our major initiatives and their business value (download a copy by clicking on the link in the online version of this story). It's critical that these IT missives be written in clear, concise business language and articulate business value. No geek-speak allowed!

For example, last year we upgraded the campus infrastructure at the National Tennis Center in Flushing Meadows, N.Y., where the U.S. Open is held. Nobody cared that we rewired the campus or that we architected and deployed a new secure network. Marketing those feats would have been useless. But people did

care that our players had wireless access to the Internet and that our 400 media guests could converge on our media center at the end of the eve-

ning and file their stories for the morning editions of their papers. And *that's* what we communicated to our stakeholders.

Last but not least, you need to take your message on the road.

We have 17 offices to which we provide services. Each is a separate legal and operational entity. Last year I visited with each of these groups to listen to their issues and to make sure that my message was playing in Peoria. There's nothing like talking with people where they live to let them know they're important to you. Executives who avoid these trips because they take too much time will have plenty of time to commiserate with other executives on the unemployment line.

## You can market your message successfully only if you are viewed as possessing integrity. It's as important to report your failures as it is your successes.

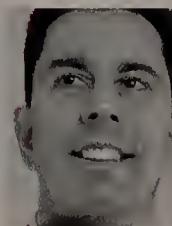
You can market your message successfully only if you are viewed as possessing integrity. Consequently, it's as important to report your failures as it is your successes. You need to tell people what went wrong and why, and what you're planning to do about it. The ostrich approach is always a mistake. People are smart enough to know that there are issues whether or not you tell them about them.

## It Works If You Work It

So, has it worked? The results we receive on our scorecards have improved by 20 percent over the past two years. Our capital projects are now sponsored by our business unit executives, not by IT, and our credibility within the organization has improved to the point where we've evolved from being considered a level-two priority (translation: a huge problem) to being seen as an organizational asset. My team is doing a great job, and they're recognized for it. Perhaps most importantly, when people see me in the hallways, they smile and come to talk to me instead of mumbling under their breath and running in the other direction. Sure, the team members have rolled up their sleeves and worked their tails off to improve and expand our services while dramatically lowering our operating costs, but who would know and understand that if we hadn't marketed our plan and our progress?

Marketing is a key element of any successful organization. If you don't believe me, just ask your CEO how important marketing the business's services and products is to the success of the company. I think you already know the answer. **CIO**

Larry Bonfante is CIO of the United States Tennis Association and a member of the CIO Executive Council and CIO's Editorial Advisory Board. For more insights and tools from Council members, visit [www.cioexecutivecouncil.com/public/content.html](http://www.cioexecutivecouncil.com/public/content.html).



### Talk Marketing with Larry Bonfante

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# Hard Problems, Soft Answers

You know your team is delivering quality, but the organization is not seeing it. Why? Because you're not delivering on your relationships.



**A**n IT executive recently said, "As you move up in the organization, people spend more time working on politics than they do on quality."

That's a pretty depressing thought for those who've spent years developing their technical skills in the naive hope that the results will speak for themselves. But when it comes to perceptions of quality, poor relationships can cast a dull patina on even the shiniest portrait.

On the other hand, for those who realize that delivery is never perfect, the fact that the perception of quality can be enhanced by strong relationships is empowering. If your team is delivering day after day without receiving the recognition it deserves, take a look at how you are managing the soft side of delivery. In our experience, we have found that there are two common barriers to building relationships: being selfish and confining your interactions to formal meetings.

## Be the Guy Next to You

It's part of the human condition to live inside one's own head—to assume that others have the same emotional needs, thinking styles and approaches to decision making that you do. But as the Army teaches, "It's all about the guy next to you." The best way to understand "the guy next to you" is to observe him, using one of the personality preference tools, such as the Myers-Briggs Type Indicator, to help you figure out how to best interact with him. Most professionals have taken these personality tests at least once in their careers but don't understand the power of the tool because they use them to understand themselves rather than to understand others.

Once you're armed with these insights, make sure you aren't



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selfish in your interactions. You can't build relationships if you are always taking and never giving. One IT executive, Mrs. Cold, called me recently and asked for a favor. We hadn't spoken in a long time, and yet the call began without the necessary tea and cookies (no "How are you?" or "How are the kids?"); instead, she dived right in to business. The interaction was cold and elicited from me a correspondingly cold response. Consequently, she didn't receive the help she was looking for. Mrs. Cold delivers, and she manages up well, but she doesn't invest in lateral or downward relationships. One day, when one of her projects stumbles and she turns for help to those she has casually dismissed, she will find herself standing all alone.

One of the most powerful concepts in influence is the idea of reciprocity, defined by Robert Cialdini, author of *Influence: Science and Practice*, as people repaying in kind. Mrs. Cold would have evoked a different response from me if she had maintained regular contact, begun the exchange by focusing outwardly instead of upon her own needs, or followed up with some type of repayment (for example, an introduction to someone I wanted to meet, or a simple thank-you note).

### Meet Outside of Meetings

Relationships aren't built in conference rooms, through e-mail or over the phone. Relationships are built one-on-one, over coffee and lunch, and in social settings. For example, consider the executive who is remarkable in his ability to get his team organized and deliver the goods. Mr. Substance should be the next CIO but probably won't be. The problem is, he's all business all the time. Once you get to know him, he's delightful. Unfortunately, he doesn't interact with others in casual settings.

Another influence principle of Cialdini's is that of liking: People like people who like them. Mr. Substance doesn't reach out to others one-on-one because he is focused on what to say rather than on what to ask. Getting others to talk—and listening in an active, as opposed to a passive way (in which you are just waiting for them to finish so you can say your piece)—is the best way to identify common values, interests, pressures and goals. Successful questioning doesn't look like a courtroom scene in *Law and Order*, with one person doing all the talking. It looks like a tennis game: Serve up the question, return with added spin, pace or direction, and respond accordingly. It's amazing how often people don't play the conversation from where it landed and instead just pick up the ball and move it to another part of the court by ignoring their partner's response and changing the subject.

Relationships make work meaningful. Not only in the way they humanize daily existence, but in how they ensure that good work is recognized, rewarded and well used. It's through relationships that you will be able to apply the tenets of marketing ("Tell them what you are going to do, tell them that you are doing it, and tell them that you got it done") in a way that isn't viewed as self-serving but instead serves others.

### Reader Q&A

**Q: I wonder how many executives understand that sometimes the keys to the outside world can come from their vendors. Many times, I do not sell services; I merely keep in touch. And if something arises where there's a fit, I mention our ability to help.**

**A:** As a CIO, I referred vendors to my direct reports. The vendors I developed relationships with were those who had something interesting to talk about, other than their product—for example, industry and competitive insights.

**Q: You say Mr. Substance should probably be the next CIO because he delivers the goods but won't be because he's all business all the time. Since when has doing one's job well become a liability?**

**A:** Doing one's job is a necessary but not sufficient condition for success as revealed by a study ("Fool vs. Jerk: Whom Would You Hire?" <http://hbswk.hbs.edu>). Not surprisingly, most people choose their work partners according to two criteria. One is competence at the job; the other is likability. What is surprising is the impor-

ance of personal feelings as a factor in judging competence. The research found that people are more likely to hire the lovable fool

#### Have a Leadership Question?

For more reader **QUESTIONS** and answers from **SUSAN CRAMM**, go online to [www.cio.com/leadership](http://www.cio.com/leadership).

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than the competent jerk. Polishing up your likability may be the best way to ensure that you receive the recognition and opportunities you deserve.

**Q: Can you mention other personality assessment tools, other than Myers-Briggs, that we can use to better understand "the guy next to you"?**

**A:** Another assessment frequently used within businesses to improve awareness of self and others is the DISC personality assessment (the acronym stands for the four behavior dimensions identified in the assessment: dominance, influence, submissiveness/steadiness and compliance/consciousness), which is based on the work of Dr. William Marston. **CIO**

Susan Cramm is founder and president of Valuedance, an executive coaching firm in San Clemente, Calif. You can e-mail feedback to [susan@valuedance.com](mailto:susan@valuedance.com). Don Reeve is CIO at Wegmans.







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## On the evening of

Sept. 27, 2001, Howard Rubin, a computer science professor at City University of New York who had advised the Clinton administration on technology issues, was home observing Yom Kippur, the holiest day on the Hebrew calendar. Observant Jews don't work, drive or use appliances on Yom Kippur, but Rubin had a strong feeling he should pick up the phone when it rang that night.

"My wife didn't want me to answer it," he recalls. But he did.

On the other end of the line was one of the most senior members of the previous administration. He wanted to know if Rubin knew of any technologies the government could use to help catch terrorists.

Rubin's answer has since become a technology mantra among members of the intelligence community: data mining, he told the official.

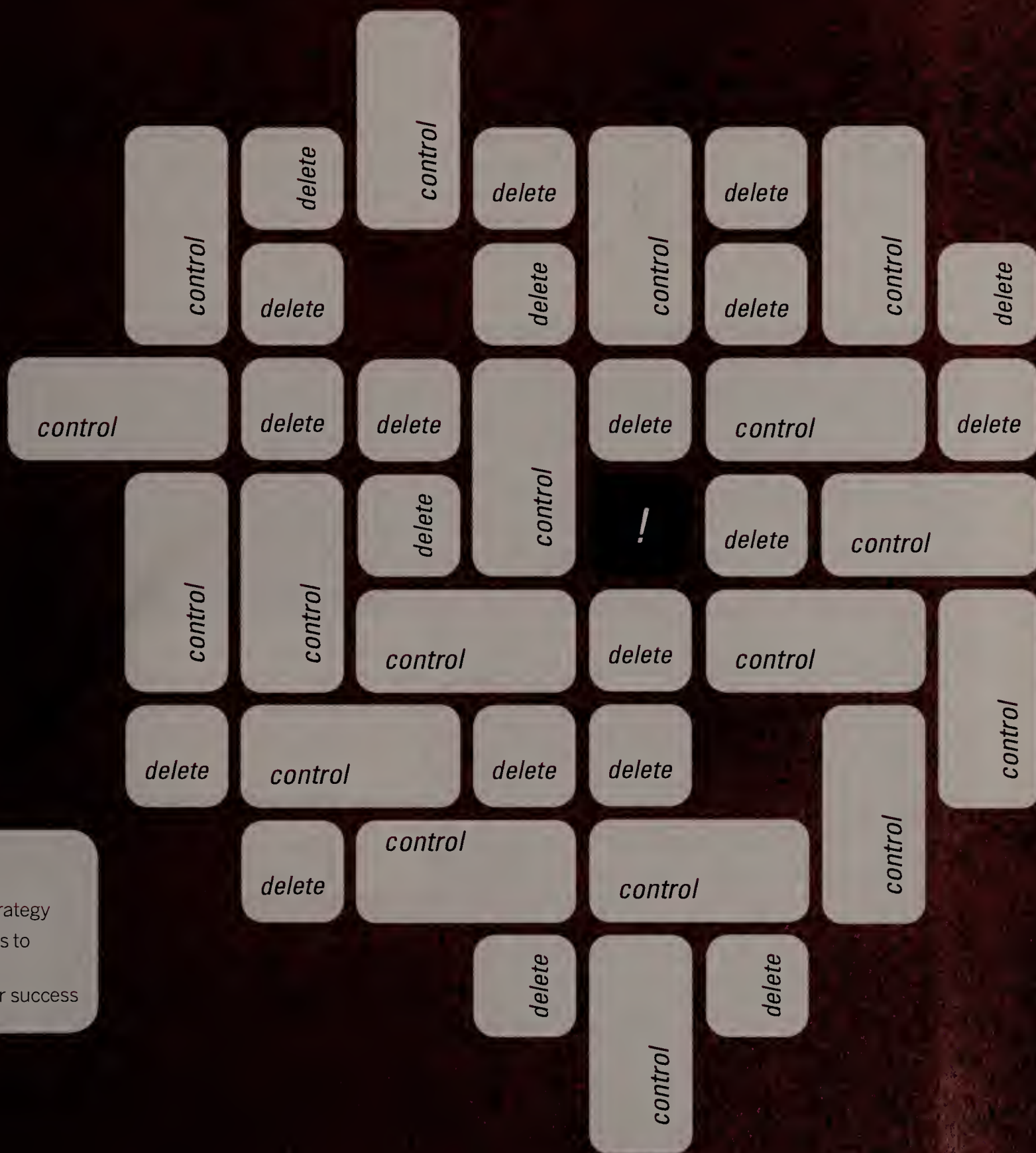
BY  
BEN  
WORTHEN

Preventing a terror attack is invaluable. But even invaluable IT projects need realistic business case analysis to succeed.

# versus

# TER





#### Reader ROI

- :: Why data mining is the preferred antiterror IT strategy
- :: How to apply ROI analysis to invaluable projects
- :: How to scope projects for success

Data mining is a relatively new field within computer science. In the broadest sense, it combines statistical models, powerful processors, and artificial intelligence to find and retrieve valuable information that might otherwise remain buried inside vast volumes of data. Retailers use it to predict consumer buying patterns, and credit card companies use it to detect fraud. In the aftermath of September 11, the government concluded that data mining could help it prevent future terrorist attacks.

## A Proliferation of Projects

Experts say that the government, and in particular the intelligence community, has come to rely heavily on data mining. A 2004 Government Accountability Office report found that federal agencies were actively engaged in or planning 199 data mining projects. Of these, 14 focused explicitly on catching terrorists and preventing attacks, a total that does not include projects at seven agencies (such as the CIA and the National Security Agency) that did not respond to the GAO survey. Over the past year, *The New York Times*, *USA Today* and other media outlets have uncovered top-secret programs within those agencies that collect and look for patterns in phone records, e-mail headers and other personal information (see "What to Do When Uncle Sam Wants Your Data," this page). When these programs were made public, the president and other members of his administration defended them as critical to the war on terrorism.

Given the administration's commitment to programs using these data mining tools and the pressure on everyone to prevent another attack, it comes as no surprise that these projects are being approved by agency heads almost as fast as they are being conceived, experts say. "There is a real fear of not going down this path, because if there is value you don't want to be on the side that opposed [a data mining project]," says Robert Popp, who was deputy director of the Information Awareness Office at the Defense Advanced Research Projects Agency. Of course, government officials also have a straightforward reason for pursuing data mining projects, says Robert Gourley, CTO of the Defense Intelligence Agency: "We want to protect our country and our way of life."

# What to Do When Uncle Sam Wants Your Data

You may think that antiterror IT is just for the gumshoes. Be prepared to participate—and, perhaps, to resist the request.

On the Friday before Memorial Day in 2002, FBI agents descended on a chain of scuba diving stores across the country called Dive Shops, trying to get data on everyone who had learned how to scuba dive since 1999. In order to help out panic-stricken shop owners, the Professional Association of Diving Instructors, the primary organization that oversees scuba certification, gave the FBI a zip drive containing names and other information on about 2 million Americans who had learned to dive over the previous three years.

It was one example of the private sector's role in the war on terrorism. The U.S. government has over 30 data mining projects that use private-sector data. And while last year the departments of Justice and Homeland Security spent more than \$25 million to purchase commercial records from data brokers such as ChoicePoint and LexisNexis, more often than not investigators get the data they want directly from companies, a tactic publicized by the recent National Security Agency project using telephone records. As the CIO, you are in charge of your company's data. Therefore it is up to you to indemnify your company against legal liability by following the proper procedures when an investigator wants your data.

The first rule, says Behnam Dayanim, a partner with the law firm Paul, Hastings, Janofsky & Walker, is to take every request to the corporate counsel's office. "You have to get a court order," he says, or else you may be violating your company's privacy policy. Also, it is important to make sure that you comply with the request in the order and don't give more than you are asked for.

Dayanim says that unless a company has a dedicated staffer to deal with requests from law enforcement (many telecommunications companies do, for example), investigators will most likely contact you through a letter addressed to a vague title like IT manager, or will call a junior-level database administrator directly. It is your responsibility to train your staff so they know that all requests must go through the legal department. "I think you have to hit people over the head with it," says Dayanim. "Most people's response is to cooperate, but it exposes the company to a tremendous amount of legal liability. It puts the company at risk." —B.W.

## No Scope, No Budget, No End

But some experts are beginning to question whether an IT strategy of unlimited scope, budget and schedule will best serve that end. It's a conundrum CIOs face every day. IT projects, no matter how vital, tend to fail when controls don't exist or those controls fall away in the face of a time crunch or crisis. Lack of oversight is the chief cause of project failures, according to the Standish Group, an analyst firm that tracks IT success rates. It leads to overly ambitious projects, an unwillingness to change the original vision and inattention to signs that something isn't working. "It doesn't matter if it is a supply chain project, an ERP system or data mining—those things need to be considered," says Jim Johnson, the Standish Group's chairman.



"No one [in the government] has looked at data mining from an IT value perspective," says Steve Cooper, former CIO of the Department of Homeland Security. "I couldn't figure out [the value of data mining] when I was in DHS, and I can't figure it out now. But that didn't stop us from using it."

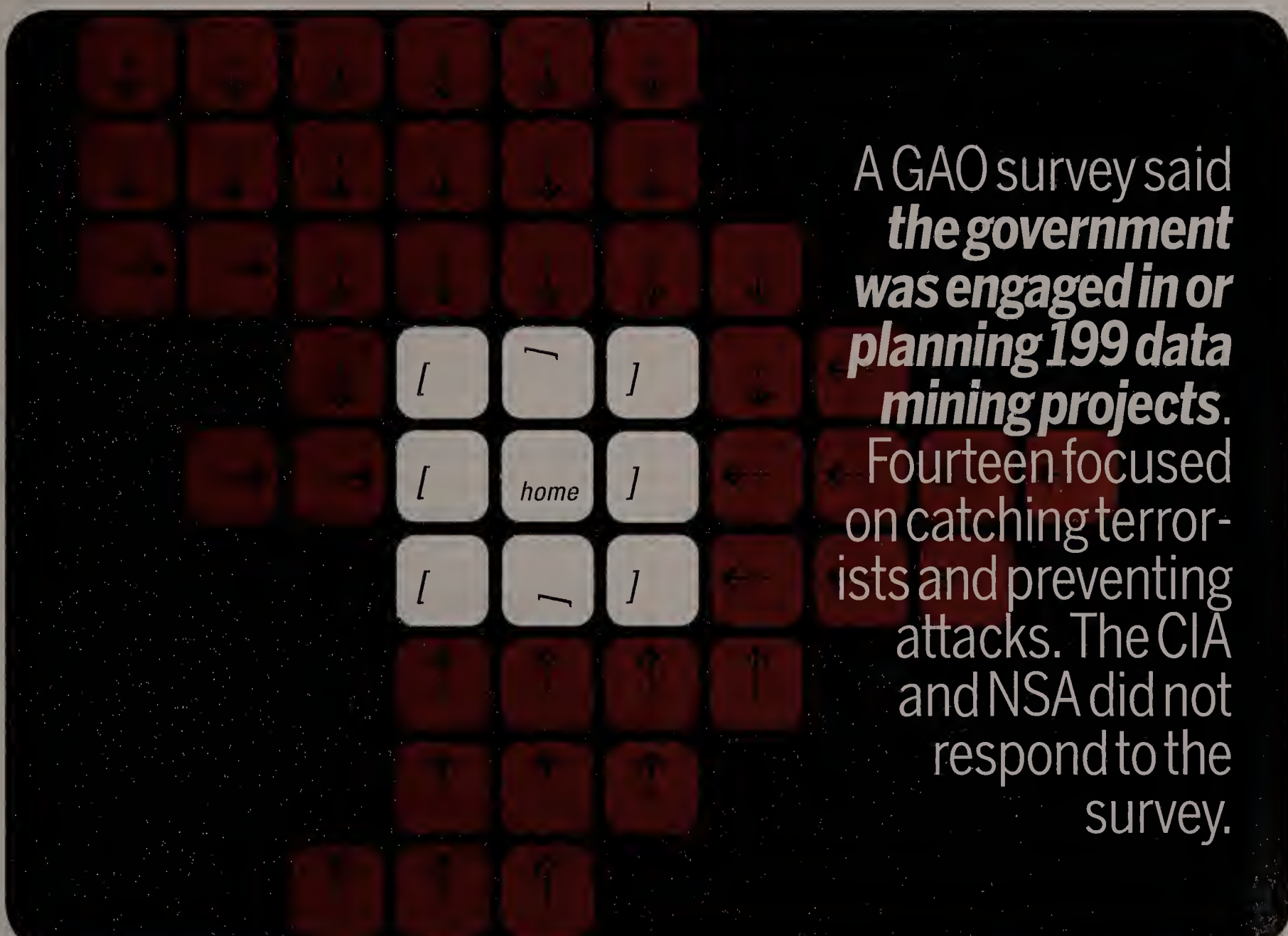
In other words, according to Cooper, no one has done a business case analysis to determine whether the government is getting a return on its investment. Instead, a rationalization is usually sufficient: If a project has a chance to catch just one terrorist, then it is worth it.

Given that the government's track record on IT project management is particularly poor (see "Federal IT Flunks Out," [www.cio.com/051506](http://www.cio.com/051506)), a lack of typical IT project analysis, prioritization and management controls could backfire. Badly. Experts worry that projects could drag on for years and that good projects could be thrown out with the bad because of privacy and civil liberties issues. (In fact, Congress has already halted a number of data mining projects, including the Department of Defense's Total Information Awareness project, an ambitious 2003 attempt to create a massive

database containing just about everything and anything that could be used to identify possible terrorists. See "Poindexter Comes in from the Cold," [www.cio.com/080104](http://www.cio.com/080104).)

Experts are also concerned that in its zeal to apply technology to antiterrorism, the government could disrupt the crime-fighting processes of the agencies that are charged with finding and stopping terrorists before they act. As any good CIO knows, if users see a system as an obstacle to getting their jobs done effectively, they will rebel or simply ignore it—in this case, with potentially disastrous consequences.

Among data mining experts, there is a growing sense that the government needs to apply the same kind of analysis to its antiterrorism IT strategy that CIOs in the private sector use to keep their projects from spinning out of control. "These projects have perfectly reasonable goals," says Fred Cate, director of the Center for Applied Cybersecurity Research at the University of Indiana. (Cate was counsel for the Technology and Privacy Advisory Committee created in 2003 by Donald Rumsfeld to study his agency's use of data mining.) "But there's no oversight procedure," he says.



A GAO survey said **the government was engaged in or planning 199 data mining projects.** Fourteen focused on catching terrorists and preventing attacks. The CIA and NSA did not respond to the survey.



## Data Mining: The State of the Art

The government's data mining projects fall into two broad categories: subject-based systems that retrieve data that could help an analyst follow a lead, and pattern-based systems that look for suspicious behaviors across a spread of activities. Most data mining experts consider the former a version of traditional police work—chasing down leads—but instead of a police officer examining a list of phone numbers a suspect calls, a computer does it.

One subject-based data mining technique gaining traction among government practitioners and academics is called link analysis. Link analysis uses data to make connections between seemingly unconnected people or events. If you know someone is a terrorist, you can use link analysis software to uncover other people with whom the suspect may be interacting. For example, a suspicious link could be a spike in the number of e-mail exchanges between two parties (one of which is a suspect), checks written by different people to the same third party, or plane tickets bought to the same destination on the same departing date. Many experts believe that the NSA project analyzing millions of domestic phone records is this kind of link analysis system.

## Finding the Hidden Linkages

However, link analysis projects are useful only if they have a narrow scope, says Valdis Krebs, an IT consultant who famously developed a map showing the connections among the 9/11 hijackers—after the fact. Successful link analysis requires a reliable starting point—a known terrorist, for example, or a phone number associated with one. Link analysis becomes less effective when it's used in an attempt to spot anomalous behavior. "If you're just looking at the ocean, you'll find a lot of fish that look different," says Krebs. "Are they terrorists or just some species you don't know about?" If the government searched for only the activities mentioned above—e-mails, checks and plane tickets—without the added insight that one of the network's members was a terrorist, investigators would be more likely to uncover a high school reunion than a terrorist plot, says Krebs. If the government casts the net too wide, he adds, the projects could cost more, take longer and raise the risk of "false positives," such as the high school reunion example.

One example of the government applying a more realistic scope to a data mining project is a system the DoD is currently testing that sifts through the data the agency has on everyone with a security clearance, looking for patterns that could identify spies. These patterns might include purchases that are out of line with someone's pay grade, unreported foreign travel or e-mail exchanges with a person known to work for a foreign government, says a counterintelligence official involved with

the project who requested anonymity. The parameters for these searches are developed by counterintelligence officers, based on their experience of what suspicious activity looks like. As the technology improves, the DoD hopes to rely on artificial intelligence to decide which patterns warrant attention and which do not.

However, even systems that have more limited scope, such as the DoD's security clearance system, are sending out mixed signals. "Right now, it's information overload," says the counterintelligence official. "With the rules we have now, we would have a ton of

false positives." His goal is to refine the system and eventually show that the concept works. This, he hopes, will encourage people to share more data.

His project isn't yet a success, nor has it been deemed a failure. He doesn't anticipate getting usable results for three or four years. The factors that will determine its future are the same as with any IT project: how well the technology performs, the problems the DoD uses the system to solve and what it does with the results it gets.

## Projects Get the Ax

If antiterrorism data mining is going to improve, the business rules aren't the only aspect that needs to change. After all, a system is nothing without good data. Sometimes law enforcement has a detailed profile of a terrorist suspect. But in other cases all they have is a name. "Names alone are not a helpful way to match people," says Jeff Jonas, data mining's acknowledged superstar, who made his name protecting Las Vegas casinos from cheats. Jonas, for example, shares his name with at least 30 other Americans. This is one of the reasons why Yusuf Islam (a.k.a. folk singer Cat Stevens) was detained in a Maine airport in 2004.

**"Five years after 9/11, we still don't have an automated system for matching passenger names with names on the terror watch list. Civil liberties had nothing to do with that."**

**—Jim Dempsey, policy director of the Center for Democracy and Technology**





After 9/11 the government began replacing the Computer Assisted Passenger Pre-Screening (Capps) system—which only tracked passenger data collected from the airlines (names, credit card numbers, addresses)—with Capps II, which would add information culled from data brokers such as ChoicePoint and LexisNexis. Capps II first gained notoriety in 2003, when reports surfaced that Northwest Airlines and JetBlue gave passenger records to the Transportation Security Administration so it could test the new system. Critics asked about privacy safeguards, which were virtually nonexistent according to public records, and in response to the outcry Congress withheld funds for Capps II until the GAO completed a study on how exactly the TSA intended to protect privacy.

In August 2004, the TSA pulled the plug on its \$100 million-plus investment in Capps II in favor of a new system called Secure Flight. Secure Flight and its predecessor share many characteristics, most notably combining passenger records with data purchased from commercial databases. (According to a recent government audit, DHS and the Department of Justice spent more than \$25 million in 2005 buying data for fighting crime and preventing terrorism.)

In September 2005, the Secure Flight Working Group, a collection of data mining and privacy experts who the TSA asked to review the project, completed a nine-month analysis and filed a confidential report that was highly critical of the system. Within a week, the report was on the Internet. It read, “First and foremost, TSA has not articulated what the specific goals of Secure Flight are.” It went on to say, “Based on the

limited test results presented to us, we cannot assess whether even the general goal of evaluating passengers for the risk they represent to aviation security is a realistic or feasible one or how TSA proposes to achieve it.”

Bruce Schneier, a security expert who was a member of the working group, sees Capps II and Secure Flight as primary examples of how the lack of proper scope has damaged antiterror IT efforts. Even if you managed to design a data mining system that could comb through phone records or credit card transaction and spot terrorists with a 99 percent success rate, it still would not be a good use of investigative resources, argues Schneier. For example, if the approximately 300 million Americans make just 10 phone calls, purchases or other quantifiable events per day, that would produce 1 trillion pieces of data a year for the government to mine. Even 99 percent accuracy would produce a billion false positives a year, or about 27 million a day. And 99 percent accuracy would still mean missing some transactions that might actually be terrorists. And no one wants to consider the price of missing another attack. That’s why Schneier wasn’t surprised when he read a January article in *The New York Times* reporting that hundreds of FBI agents were looking into thousands of data mining-generated leads every month, almost all

of which turned out to be dead ends. “It’s a waste of money,” he says. “[Data mining] is a lousy way to fight terrorism.”

By contrast, says Schneier, data mining has worked to prevent credit card fraud because con artists act in predictable ways and operators of credit card data mining systems have drawn a clear ROI line for an acceptable level of false negatives and posi-

#### The Big Picture of Antiterror IT

For more *CIO* coverage of the government's efforts to manage IT projects and IT's role in the war on terrorism, go to our special section on **YOUR ROLE IN NATIONAL INTELLIGENCE** at [www.cio.com/special/reports/surveillance.html](http://www.cio.com/special/reports/surveillance.html).

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tives, and adjusted the system's settings accordingly. For example, most credit card issuers are willing to accept losses of several thousand dollars to prevent alarm bells from ringing every time a customer goes through a checkout line. If false positives are infrequent, customers don't mind the occasional disruptions; indeed, they may even view it as a positive sign that the card issuer is working hard to protect them. With system sensitivity correctly calibrated, a handful of thieves may get away with fraud, but the system as a whole isn't compromised.

Capps II and Secure Flight had no such ROI mechanisms. But rather than reexamine the goals and scope of the projects, the government simply expanded them to include profiling, a hunt for common criminals and more. And as happens so often with IT projects when their goals are too broadly defined, the system is still not active despite an originally planned go-live date of November 2003.

"TSA was never willing to reevaluate the scope of the project," says Jim Dempsey, policy director of the Center for Democracy and Technology, who was part of the TSA's Secure Flight Working Group with Schneier. "So now, five years after 9/11, we still don't have an automated system for matching passenger names with names on the terror watch list. Civil liberties had nothing to do with that."

## The Antiterror IT Business Case

Despite prominent failures like Capps II, there is still a general feeling among data mining experts and even privacy advocates that data mining can be an effective tool against terrorism. And because the technology is so new, it stands to become even more helpful with time—if it is managed properly. "This is an evolutionary project," says Rubin. "And it is being fueled by events. When that happens you get there eventually. You figure out how to get the man on the moon."

Indeed, CIO has learned of one example of an antiterrorism data mining project that has worked—a link analysis system that helped investigators at Guantanamo Bay figure out which detainees were likely to be terrorists. In 2002 and 2003, the Criminal Investigative Task Force (CITF), a branch of Army Intelligence, was assigned to interrogate detainees at Guantanamo and determine who was a terrorist and who was simply in the wrong place at the wrong time.

In this instance, CITF had reliable data about the detainees, including where they were captured, who they associated with at Guantanamo and other details about their behaviors and relationships. Investigators used a commercially available tool from software vendor I2 to construct a chart of all the detainees, including every known attribute about a detainee and his links to other suspects. This information was then fed

**"As far as the oversight process, it is clear that antiterrorism data mining is a disaster."**

—Fred Cate, director of the Center for Applied Cybersecurity Research, University of Indiana

into a University of Massachusetts--developed system called Proximity to examine these attributes and links, compare them with the profiles CITF had on known terrorists and known innocents, and calculate the probability that a given detainee was a terrorist.

## A Need for More Oversight

The Guantanamo system had a limited scope, a reliable starting point culled from human investigations, and a fair shot at reducing the number of false positives and negatives. In other words, the technology was carefully applied, and the result was a system that solved a real problem, says Popp.

But this is the exception. Most data mining projects are not subjected to a rigorous business case analysis. Two current intelligence CIOs who were otherwise unable to comment for this story agreed that this is an issue that they struggle with. The DoD's Technology and Privacy Advisory Committee (TAPAC) developed a 10-point system of checks and balances that it recommended every agency head apply to data mining projects, but Cate says that it has never been implemented. Similarly, the National Academy of Sciences recently appointed a committee to develop a methodology that the government can use to evaluate the efficacy of its antiterror data mining projects, but the target date for its report is still more than a year away.

What's left is the status quo. That's troubling to people like Cate. "There are some extraordinarily smart people [working on data mining systems], and I would be hard pressed to think that they are wasting their lives on something that doesn't work," he says. "But one of the things [TAPAC] kept focusing on was that you have to be able to show that it works within acceptable parameters," a responsibility that he says rests with agency heads.

Agency heads aren't accepting that responsibility, says Cate. "As far as the oversight process is concerned, it is clear that [data mining to prevent terrorism] is a disaster." **CIO**

Senior Writer Ben Worthen can be reached at [bworthen@cio.com](mailto:bworthen@cio.com).



\_INFRASTRUCTURE LOG

\_This is the worst day of my life ever.



• I.T. MANAGER • HORRIBILIS •





IBM®

\_7:55 a.m.: Came in this morning and found an office out of control. No one can collaborate. No one can get real-time answers. Web conferencing services are driving costs through the roof. And unmanaged public IM is a security nightmare.

\_8:02 a.m.: Gil brought in a "collaboration accelerator." I said it looked more like a cannon. He said I had a small mind.



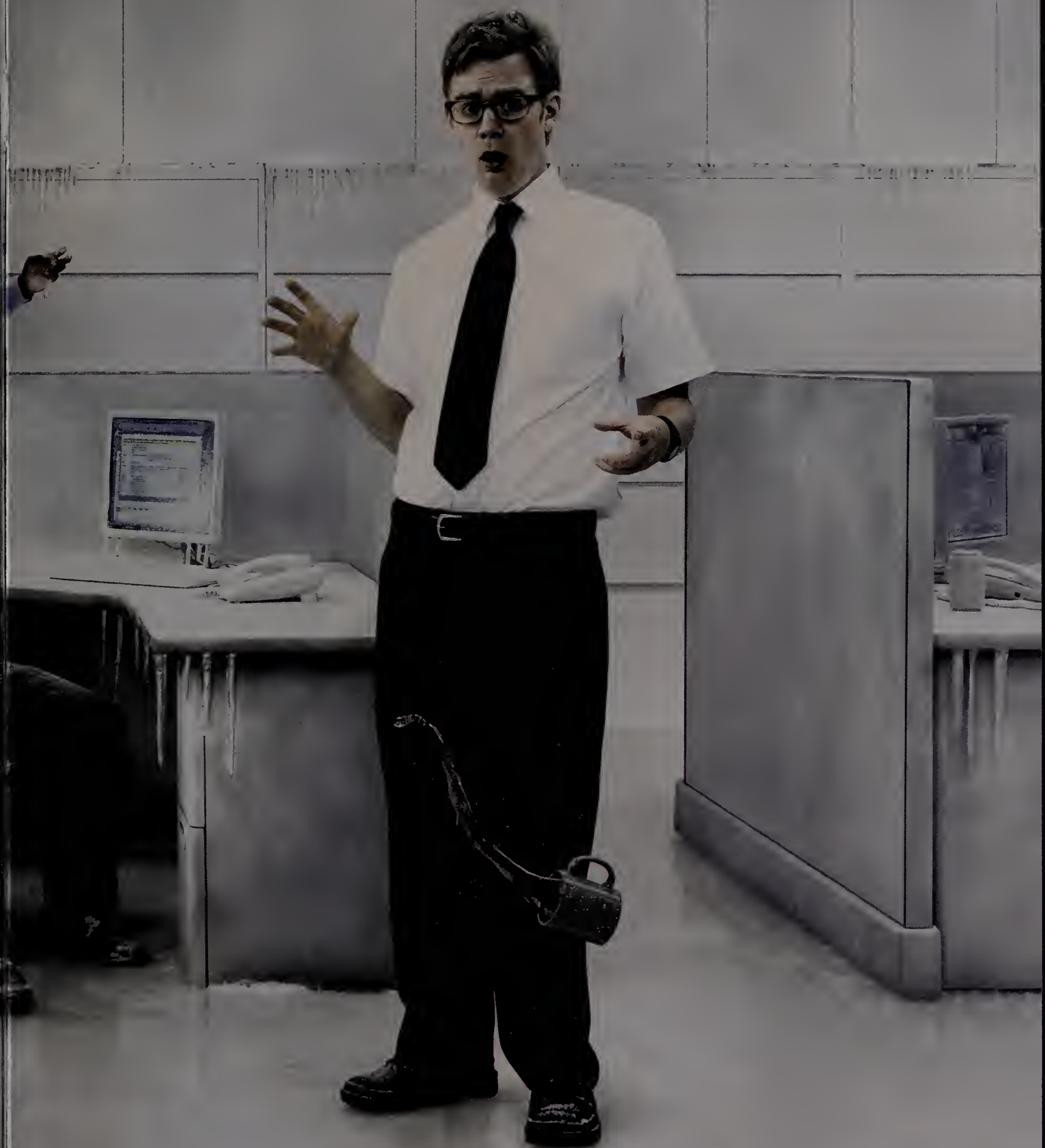
\_10:45 a.m.: Went upstairs and found everything frozen, literally. It's our processes. They're inflexible. Hard coded so we can't change them or even respond to change. Why did we lock ourselves in like this? Brrr.

\_I don't have the patience or the budget to fix it. This is crazy. I got freezer burn from my keyboard.



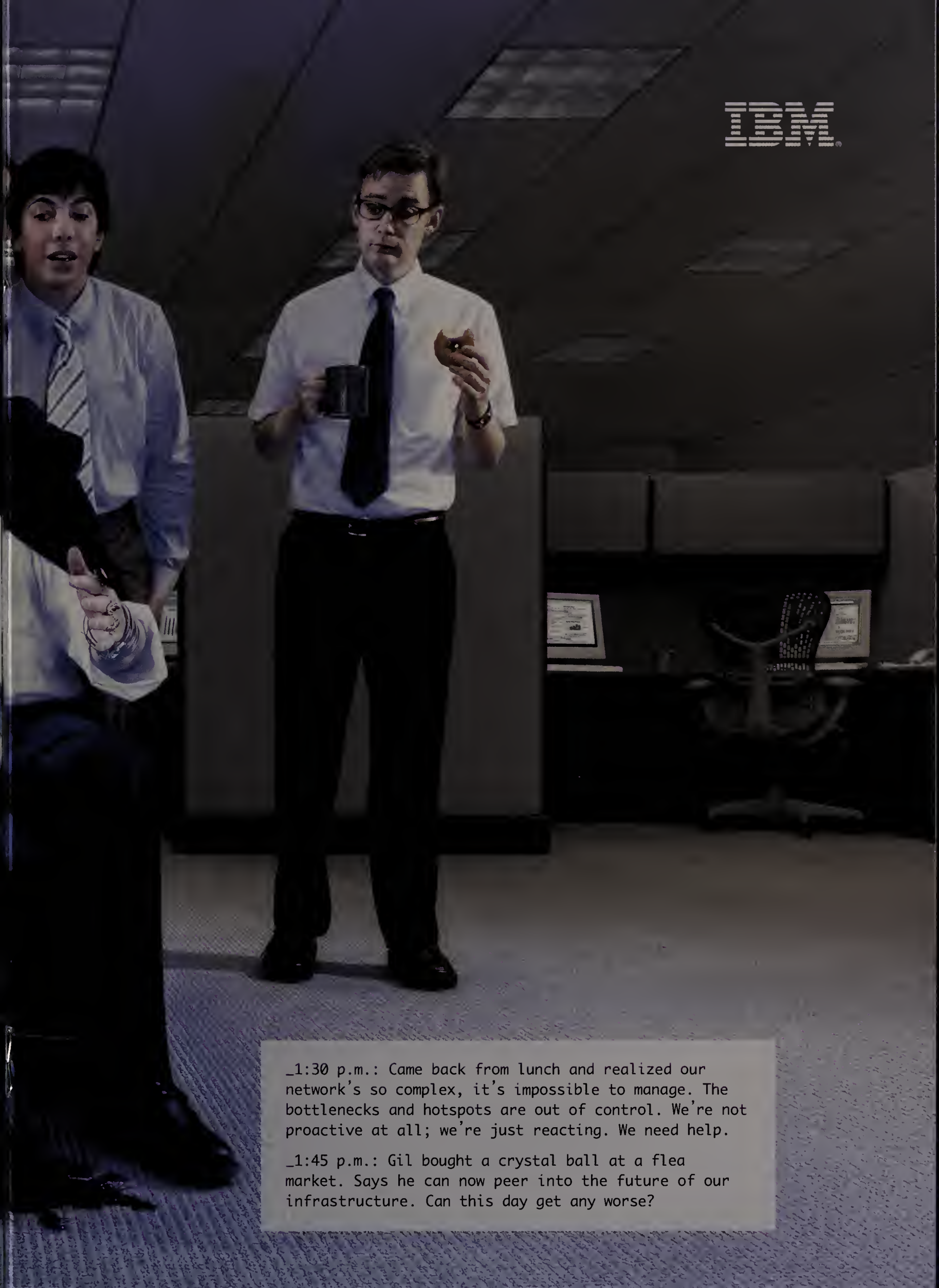


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\_1:30 p.m.: Came back from lunch and realized our network's so complex, it's impossible to manage. The bottlenecks and hotspots are out of control. We're not proactive at all; we're just reacting. We need help.

\_1:45 p.m.: Gil bought a crystal ball at a flea market. Says he can now peer into the future of our infrastructure. Can this day get any worse?

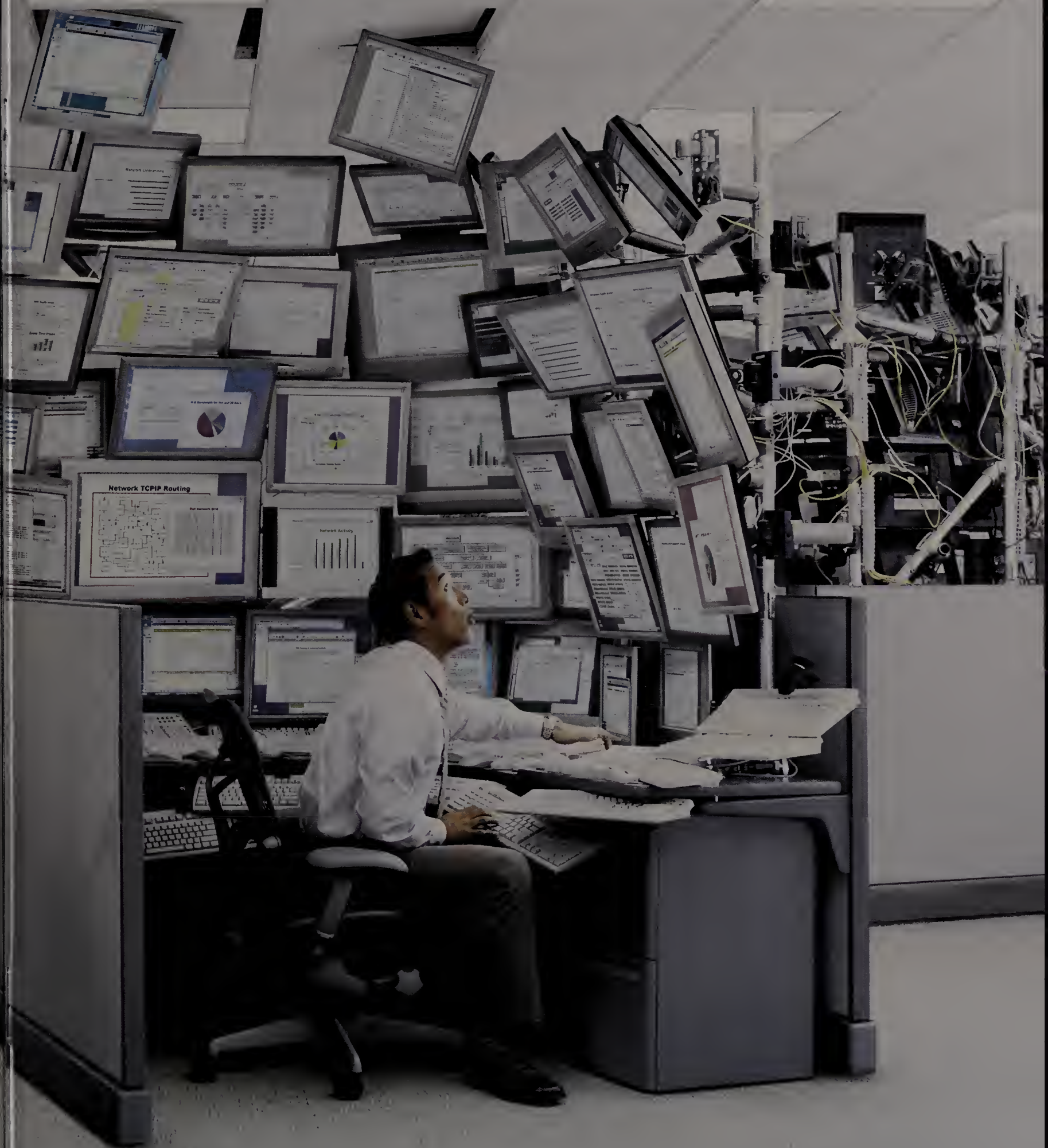
\_3:59 p.m.: It got worse. Our information is out of control. It's totally unmanageable. It's siloed. People can't access the latest info to make decisions. Gil's resorted to giving every database to everyone all at once.

\_4:37 p.m.: Monitors now outnumber humans 18 to 1. The eyestrain is so bad we had to hire an in-house ophthalmologist.

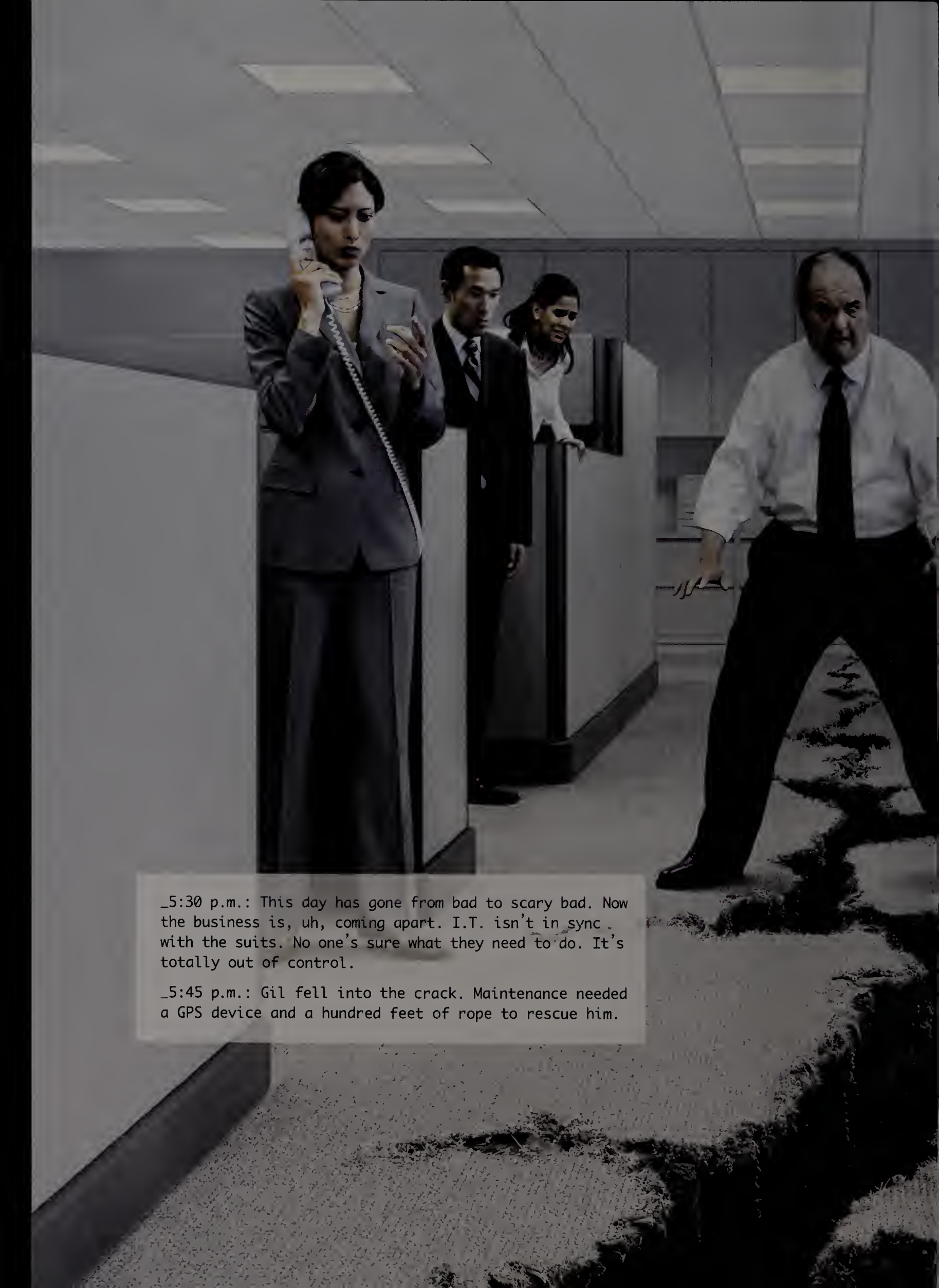




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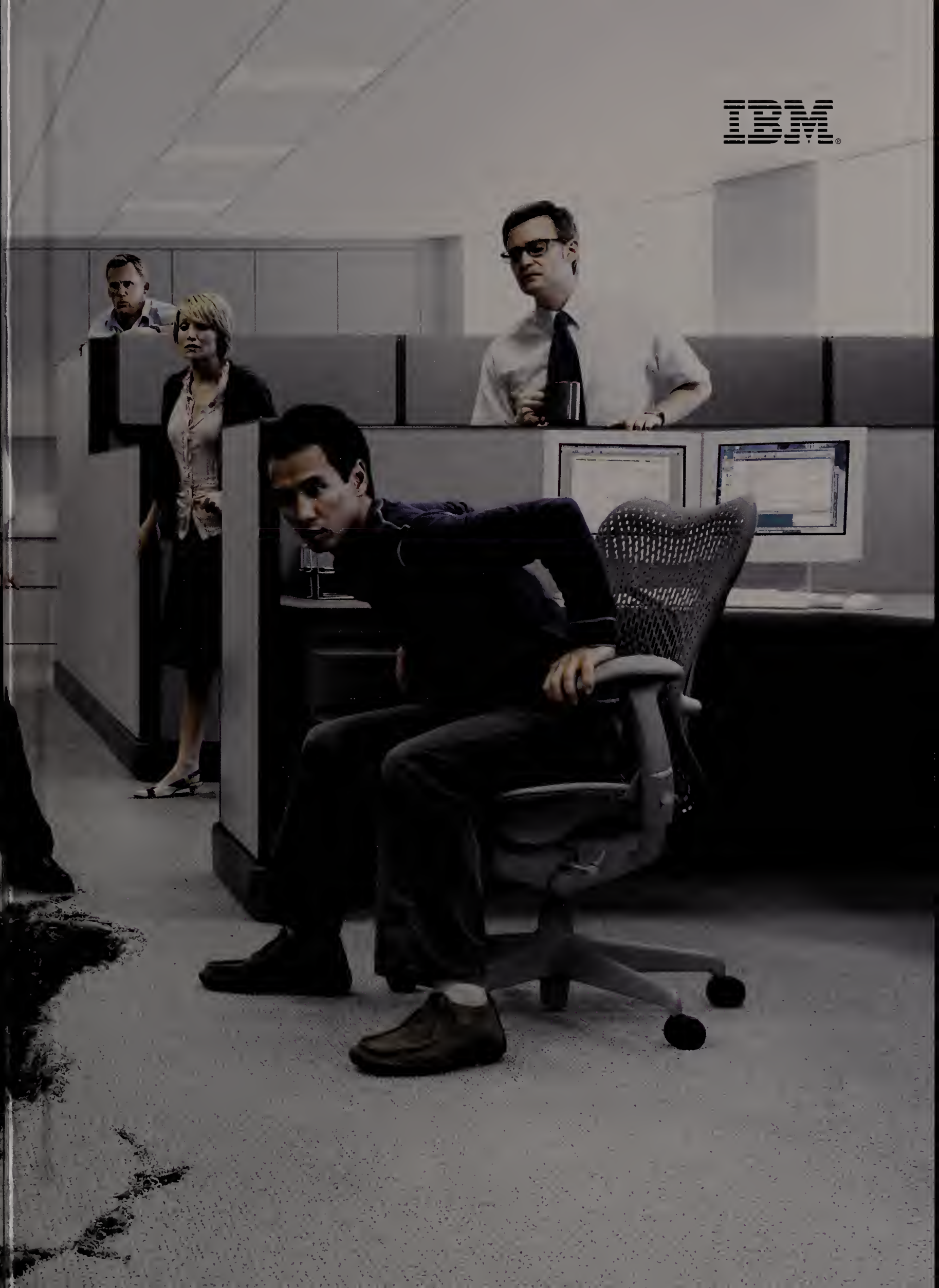


\_5:30 p.m.: This day has gone from bad to scary bad. Now the business is, uh, coming apart. I.T. isn't in sync with the suits. No one's sure what they need to do. It's totally out of control.

\_5:45 p.m.: Gil fell into the crack. Maintenance needed a GPS device and a hundred feet of rope to rescue him.

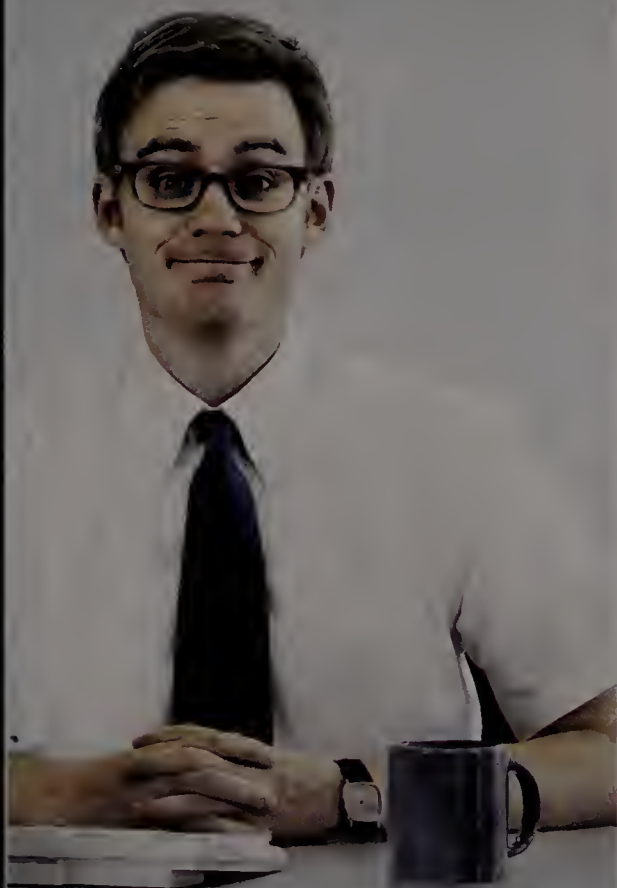


IBM®





\_6:02 p.m.: The day is looking up thanks to me, Ned.  
Ned, who took back control with IBM middleware.



**Control sluggish collaboration** with IBM Lotus® Sametime® 7.5. It's not just IM and Web conferencing. It's a platform for running your business in real time. It's encrypted. It's packed with features like spell check, VoIP and location awareness. And it even works seamlessly with leading public IM networks. Now everyone in your business has real-time answers.



**Control frozen processes** with IBM WebSphere middleware. It lets you streamline tasks and optimize performance. Simulate and test processes before you roll them out so you can understand the real impact they'll have. Measure and monitor performance once those processes are deployed. And it's built on a service oriented architecture so it's flexible and future-ready.



**Control perplexing infrastructure problems** with IBM Tivoli middleware. It gives you a holistic view of your entire infrastructure so you can analyze the relationships between apps, systems and networks. It's built on open standards and is modular. It scales to your needs. It isolates and fixes problems proactively for more uptime and more storage availability.



**Control information siloes** with an IBM Information On Demand middleware solution. It liberates your siloed information so you can access anything, no matter where it is or what its format. Your information will be accurate and in context. It's based on open standards and it supports an SOA. And it gives your people all the information they need to make smarter decisions.



**Control out-of-sync software development** with IBM Rational middleware. It helps manage your offices' development teams and ensures that your software is in compliance. It can even implement a service oriented architecture. With Rational, everyone knows their job and everyone works together. The development process is governed and aligned with your business goals.

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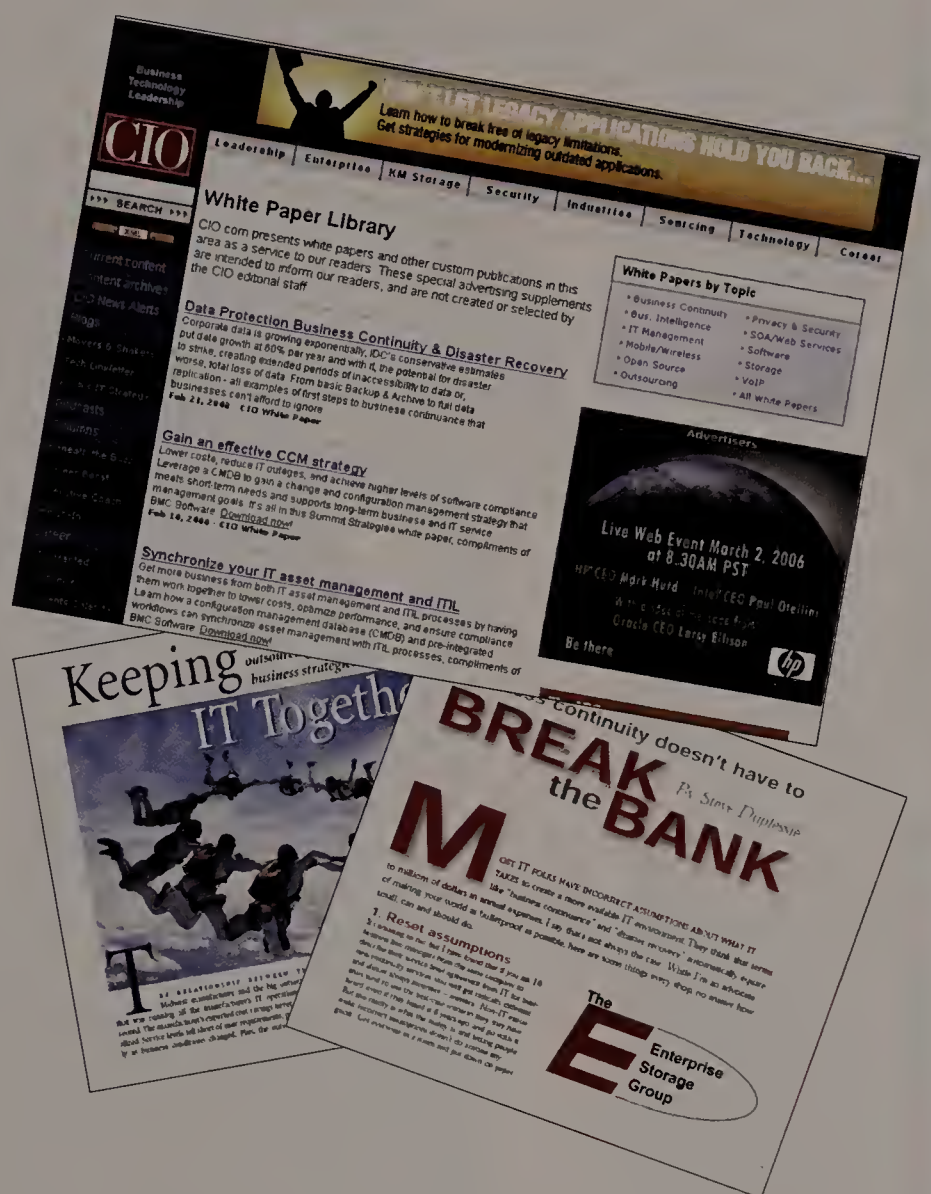
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Business  
Technology  
Leadership



Gale GFS managing director  
**Kenneth McCrae:** "My immediate thought was, how lucky have I been? Then I knew I had to check on the safety of colleagues in London."





# Disaster!

A little more than a year ago, terrorist bombs ripped through London, killing people, disrupting communications and shutting down the city. Here's how one global company quickly connected with its employees and kept the business running.

BY SUSANNAH PATTON

**O**n the morning of July 7, 2005, Kenneth McCrae left his hotel in central London and headed for Baker Street Underground station. It was a warm day and he remembers looking longingly across the street at the green grass and trees in Regent's Park before heading down to catch his train.

McCrae boarded at 8:42 a.m. along with the millions who jam the city's famous subway system each day. On a whim, he decided to take the Metropolitan line instead of the Circle line. It turned out to be a good choice.

At 8:50, a series of powerful bombs exploded underground, and one of those seriously damaged a train on the Circle line, just two trains ahead of McCrae. Above ground, another blast would rip apart a bus in Tavistock Square nearly an hour later. Meanwhile, McCrae and his fellow passengers sat in the dark, silently, for 20 minutes. It wasn't until they left the train, filed down the dark tracks

#### Reader ROI

- :: The primacy of tracking employees in a crisis
- :: How storing data about past incidents can generate best practices
- :: The importance of having multiple channels of communication



and walked up the stairs into the daylight at King's Cross station that they realized something very, very bad had happened.

The terrorist bombings in London that day killed 56 people, wounded 700, crippled lines of communication and effectively shut down one of the world's largest cities. As sirens blared, McCrae, managing director of real estate management company Gale Global Facilities UK, a division of Gale Global Facility Services, pulled out his BlackBerry and called his boss in New Jersey.

"My immediate thought was, 'how lucky have I been?'" says McCrae, who splits his time between his home in Scotland and a hotel in London. "Then I knew I had to get in touch with the home office. I

had to somehow check on the safety of colleagues in London."

Even though much of the area's phone and cellular networks were quickly overwhelmed, McCrae was able to reach New Jersey as well as a colleague in Toulouse, France, who went immediately to the company's intranet site to open an "incident report," which would soon chronicle the day's events and help account for the location and safety of Gale GFS employees in the London region. McCrae used his BlackBerry to communicate with his colleagues in London, around Europe and in the United States. Within 90 minutes, Gale was able to account for all of its 80 London-based employees. The company's Incident Reporting System, or IRS, which

sends out e-mail alerts to the cell phones, BlackBerrys, pagers and laptops of those concerned and also informs employees via a sort of Web chat room on their home-built company portal, helped spread the news of the unfolding crisis. And because of it, Gale GFS never stopped operating.

McCrae's experience—and the company's ability to communicate broadly through a variety of channels—shows how companies hit by disaster can effectively track employees using simple Web and mobile technologies. During the London bombings, many companies suffered from a total information blackout because most communications lines were blocked. Gale GFS, however, was able to find its employees, make sure its properties were safe and send alerts to those in charge within a short period of time. This kind of system, which relies on cell phones, e-mails, BlackBerrys and pagers to communicate, is simple but, unaccountably and unfortunately, rare. Many companies simply don't have systems in place to keep track of and communicate with employees during and just after a crisis, experts say.

"It's not just putting out fires; it's about staying in business, and one of the essential steps is tracking employees," says Jack Harrauld, director of the Institute for Crisis, Disaster and Risk Management at George Washington University. "Technology can help you do this."

### The Limits of E-Mail

Gale GFS's crisis management system was born out of the company's desire to better communicate with its employees on a day-to-day basis. The company started to build its Incident Reporting System in 2003 when its largest client, AT&T, asked for help. The telecom giant was looking for a way to let employees know, in real-time, what was happening when there was a major incident—a hurricane or power outage—at one of its locations. "They wanted to be able to let everyone know what was happening even as the situation was changing every few minutes," says Chris Messineo, assistant VP for IT at Gale GFS (a unit of the Gale Company), which manages and oversees properties around the world for clients

## 4 Great Moments in Crisis Management

**1. Mitigation** According to the Book of Genesis, God decided to flood the Earth to punish humankind for its bad behavior. To mitigate the disaster, God told Noah to build an ark, instructing him to take along his wife and family, as well as one pair of every living creature. When the heavens opened and rain poured down for 40 days and 40 nights, the ark floated and the world was preserved.

**2. Negotiation** In 1962 President John F. Kennedy prevented the arming of Soviet nuclear missiles in Cuba after a tense 13-day confrontation between the two superpowers. After reconnaissance photos showed Soviet missiles on the island, Kennedy ordered a naval blockade to prevent Soviet supply ships from approaching. Thirteen days later, Soviet General Secretary Nikita Khrushchev announced that the installations would be dismantled. This Cold War brinkmanship was mitigated by back-channel negotiations between the two nations. It was later revealed that in return for the

Soviets removing their missiles, the United States had agreed to dismantle its own bases in Turkey.

**3. Communication** Severe Acute Respiratory Syndrome (Sars) first appeared in the Guangdong province of China in November of 2002. The virus then traveled to 30 countries around the world in 2003 after news of the outbreak was initially suppressed by the Chinese government. The virus was successfully contained after the World Health Organization (WHO) sent out worldwide alerts. Dr. Carlo Urbani, WHO expert on communicable diseases, was the first to identify Sars, and his swift actions led to global awareness. He died of Sars on March 29, 2003.

**4. Preparation** After the Federal Emergency Management Agency's September 2005 response to Hurricane Katrina proved disorganized and ineffective, Wal-Mart, thanks to its robust supply chain and logistics expertise, was able to quickly truck in much-needed supplies to flooded New Orleans. —S.P.





Gale GFS president and CIO **Ian Marlow** wanted to make sure that top executives could communicate with employees from inside an affected location using multiple forms of communication.

including AT&T, GlaxoSmithKline, IBM and Toys “R” Us.

Messineo, working with Gale GFS president and CIO Ian Marlow, decided they needed to create an alternative to e-mail, which can be an inefficient way to find employees during a crisis because it can create a tangle of messages that cross each other. The two had initially designed the company portal in 2002 in an effort to share information inside the company, and had more recently added functions such as file-sharing to allow vendors and clients to use it as well. Messineo stresses that the system, built using Microsoft’s ASP.net and SQL Server, was designed for simplicity. “In fact, its power is in its simplicity,” he says, noting that—so far—it has never locked up or crashed and that all of the code used to run it can fit on a single floppy disk. The system had to be robust and easy to use, even for employees connecting from dial-up modems in airports. And unlike more complex Web conferencing systems, employees access it directly from any Web browser and don’t need to download software to do so. Messineo says his team was successful because they kept

the application simple. And while AT&T was the first to request such a system for its property managers, all of Gale GFS’s clients can now use the IRS.

Recent disasters have shown that companies focused on the process of finding their employees after a disaster are more resilient than those intent only on keeping their systems running, says Yossi Sheffi, director of MIT’s Center for Logistics and Transportation and author of *The Resilient Enterprise*. After Hurricane Katrina, for example, Sheffi notes that Wal-Mart’s first order of business was to account for all employees. Only then did it reopen its affected stores. “The first thing [in a crisis management strategy] would be to instill in your employees the importance of getting in touch after a disaster,” says Sheffi.

### Keep It Simple and Flexible

Gale GFS employees agree that policies urging employees to keep in touch with each other are as important in a crisis as the technology itself. Adding the Incident Reporting System—which operates as a sort of business blog—to Gale GFS’s portal site was not complicated, Messineo says.

Essentially, an employee can log on to the Web-based system with a user name and password and write about a hurricane, an explosion or any other incident. Gale GFS designed and built its system to automatically send out an e-mail notification to everyone in the region. Through an online control panel, administrators can determine who gets notified by region and by company. E-mail alerts pop up on cell phones and BlackBerry pagers, as well as on computer screens. Originally, Messineo says, AT&T said it wanted to be able to track 40 fields of information—ranging from precise location to detailed weather conditions and number of employees—for each incident. That level of complexity, however, would mean that the system would be slow. Messineo decided to reduce the number of categories within each type of incident to a maximum of eight. The result: Employees can connect to the system using a 56K modem with pages loading in under three seconds. And they can also access the system from an Internet café or any other Web connection.

According to Marlow, who is also COO of Gale GFS’s parent, the Gale Company,



the main challenge was to make sure that top executives could communicate with employees from inside an affected location using multiple forms of communication. Just after the 9/11 attacks, for example, telephone traffic was rerouted and it was impossible to call the World Trade Center area using landlines. In the London bombings, the cellular network was essentially shut down, but Internet and BlackBerry communication was still working.

"The goal is to be prepared for any type of incident, whether it's a hurricane or tornado, or bomb scare or terrorist attack," says Marlow. "Communication lines will be affected depending on the incident, so we need to remain flexible."

## Blogging for Safety

When a Gale GFS employee first logs on to his computer, he sees a welcome screen filled with company news and announcements, similar to countless other corporate intranet sites. Gale GFS's, however, has a small box in the upper left-hand corner: the Incident Reporting System. Depending on the employee's location, that box may contain information on power outages, fires or impending hurricanes. Like a journal or blog, the entries track developments and conversations between employees.

For example, a property manager in Houston logged on to the IRS on Sept. 23, 2005, alerting employees in the area as Hurricane Rita approached. The subsequent back and forth between the property manager and other employees chronicles the weather reports and developing plans to secure property and account for employees. Each time an alert was placed on the intranet site, employees were notified on their mobile devices and via e-mail.

Each case or incident is archived in the system so that others can retrieve them from the database in order to study them. "From reading and analyzing the information, we can gather best practices and bring them back to the company as a whole," says Chris Furlong, manager of education and training for Gale GFS. Each session, however, is available for viewing only by the employees working with a specific client so as to maintain security. For example, if an AT&T site experiences a power outage,

only Gale employees working on that account (and, of course, their client, AT&T) will be able to see what's going on. Furlong says that new employees can be trained on the system in 10 minutes.

Before the IRS system was developed, employees had to stay on the phone for long stretches in order to stay up to date, says William Mellin, a Gale GFS VP. With the IRS, people can do their job while they check the site, or get information via handheld devices. "It's more productive to have people working than tied to a conference call or webcast," Mellin adds.

Messineo also says that before the IRS, e-mails between employees created a "spider web" in which messages crossed each

other, and made it hard to make sure who was speaking to whom and when.

## People Versus Property

When the London bombs went off, Marlow was watching the early morning news on TV at his home in New Jersey. He immediately picked up the phone. Within minutes an incident report was opened on the company intranet and Marlow had accounted for the safety of the top four executives in the region, including McCrae, who had provided the initial information to a colleague in France. Then McCrae got in touch by phone with the manager of Gale GFS's account with GlaxoSmithKline, one of its largest clients in the London area, who was able to log on to the intranet and account for all employees at those London facilities through the IRS.

When all employees in the London area had been accounted for, Marlow sent out a worldwide e-mail alert. "As a global company,

# 4 Not-So-Great Moments in Crisis Management

**1. Covering up** After a burglary at the headquarters of the Democratic National Committee in the Watergate apartment complex in Washington, D.C., in 1972, President Richard Nixon, instead of turning in the members of his staff who conceived and executed the break-in, sought to protect them and cover up his own involvement. A "smoking gun" tape later revealed his role and led to his impeachment and subsequent resignation on Aug. 9, 1974.

**2. Bad intelligence** President John F. Kennedy approved a secret, underfunded and ill-conceived plan to overthrow the government of Cuban President Fidel Castro in 1961. The scheme assumed that when U.S.-trained Cuban exiles landed in the Bay of Pigs in Southwest Cuba they would be supported and joined by thousands of freedom-loving Cubans. They weren't, and the invasion failed ignominiously.

**3. Poor diligence** Information broker ChoicePoint sold the personal information of 145,000 people to inadequately vetted bogus businesses. As a consequence, many people later became victims of identity theft. ChoicePoint will pay \$15 million to settle charges it failed to protect consumers' information, the Federal Trade Commission announced in January 2006.

**4. Failed processes** A laptop containing sensitive personal information on 26.5 million U.S. veterans was stolen May 3 from the suburban Maryland residence of a Veteran's Administration data analyst who wanted to work at home but did not have remote access to the VA's system. News of the theft was kept under wraps for 19 days. A week later, Michael H. McLendon, VA deputy assistant secretary for policy, announced his resignation.

—S.P.

### When the Going Gets Tough

To hear IT executives describe their own **WORST-CASE SCENARIOS**, go to [www.cio.com/podcasts/leadership/podcast.html](http://www.cio.com/podcasts/leadership/podcast.html).

**CIO.COM**



we have people all over the world, and in the event of a major disaster, everyone wants to know about people's safety," Marlow says.

Meanwhile, in London, McCrae had convinced the owner of a pub in Leicester Square to allow him and two colleagues to hole up there for the afternoon. With the trains and buses stopped, traffic closed, and phone and cellular networks failing, McCrae spent the next hours using his BlackBerry, which was drifting in and out of service, to send and receive information. "That day was filled with lots of uncertainty, and many companies struggled to communicate," says McCrae, who was able to feed information about the attack and its aftermath to colleagues who then updated the IRS. "I didn't realize the power of the portal until then," he says.

Gale GFS isn't the first or the only company to use a combination of Internet and mobile technologies to keep track of employees and monitor crisis situations. Companies are increasingly looking at building websites that can account for the whereabouts and status of employees (and in the hotel industry, guests), says George Washington University's Harrauld. Others are looking into Web conferencing systems that can provide emergency meetings around the world. And some are considering using companies such as iJet and U.K.-based Control Risks Group to provide Web conferencing services that can keep tabs on far-flung employees and also provide a dashboard on which executives can monitor employee whereabouts and safety.

Security software vendor SunGard Availability Services has offered a "notification service" for the past three years that allows companies to keep in touch with employees through multiple channels. Don Norbeck, product manager at SunGard Availability Services, says the service was initially hard to sell, but no more.

"Technology is starting to replace traditional call chains," says Harrauld. Up until 9/11, companies viewed crisis management primarily as an exercise in property protection. After the attacks on the World Trade Center and the Pentagon, that perception changed. For example, Harrauld knows an employee of a large bank who, in the wake of 9/11, had to call the homes of

thousands of employees to see if they were alive. "Companies are trying to get away from that," he says.

For organizations now looking to build a system to track employees and share information during a crisis, Gale GFS serves as a model for those who want to add a discussion board to an already existing intranet or portal. Mellin, who is a portfolio manager on the AT&T account

## Crisis Management Tools

The most important thing is to have a lot of them

In crisis management, redundancy is key. That's why Gale Global Facility Services built its Web-based Incident Reporting System (IRS) so that it can contact employees on multiple devices. Chris Messineo, Gale GFS's assistant VP for IT, says it's also a good idea to collect employees' personal e-mail addresses as well as their professional contacts so they can be reached if the company network crashes. Here's a list of hardware and software that should play a role in any crisis management plan:

**Intranet site or portal** Make it secure but easy to access from a Web browser, without the need to download software.

### Devices

- Cell phones
- Laptops
- Pagers
- PDA's

**Telephone landlines** Keep good records of employee home phone numbers as well as work lines.

**E-mail** Keep records of employee home e-mails, such as Yahoo, Gmail or Hotmail, in addition to work e-mail addresses. —S.P.

and has been using the system for the past three years, says he would recommend the simple, Internet-based system because the need for training will be very low. By adding a forum or chat module to an existing secure intranet site or portal, companies can quickly document an employee's safety, while sending important information to those in the field. Messineo says that such modules are relatively easy to develop internally using tools such as Microsoft .Net and are very easy to maintain. All data can be backed up each day on a standard Dell server using .Net SQL and on a duplicate server offsite.

## Preparing for "Next Time"

While McCrae sat in the pub in the aftermath of the bombings, he was frustrated that he couldn't feed information directly to the IRS. The system was built before every executive carried a BlackBerry, so it did not allow for direct feeds from the device to the site. Instead, McCrae was sending comments about his well-being and the condition of employees to colleagues in the United States and France, who then logged the information on to the intranet.

That will change. Messineo and his IT team are now working to allow BlackBerry and cell phone users to send text directly to the IRS. This involves new coding that will accept BlackBerry messages as real-time updates. By the third quarter of this year, if a hurricane hits, a power line goes down or a bomb explodes anywhere where Gale does business, its employees will be able get in touch with the IRS instantly, Messineo says, from any device.

Although McCrae hopes there won't be a next time, he believes his experience in the hours following the bombings taught him some key lessons.

"It's important to imagine how you would respond to a wide range of crises," he says. "Then, you've got to have a system that will allow you to communicate using multiple devices. If you have flexibility, you have a much better chance of finding your employees and making sure that your property and systems are in place." **CIO**

Senior Writer Susannah Patton can be reached at [spatton@cio.com](mailto:spatton@cio.com).

# ALL THAT DATA

Smart CIOs are experimenting with new Web-based technologies to integrate their customer data applications without having to rip out their legacy systems. But before they plunge into the implementation, they need to craft a data management strategy.

BY THOMAS WAILGUM

THE MULTIPLE MERGERS THAT FORMED INSURER UnumProvident in the late '90s aggregated billions in revenue, assembled thousands of employees—and created a quagmire of customer data systems that couldn't talk to each other. In all, between Provident, Colonial, Paul Revere and Unum there were 34 disconnected policy and claims back-office systems, all loaded with critical customer data. As a result, “it was very difficult to get your hands around the infor-

#### Reader ROI

- :: Data management strategies for CRM success
- :: Why business ownership of customer data is so critical
- :: The role Web services and service-oriented architectures play in new CRM approaches





**Bob Dolmovich,**  
UnumProvident's  
VP of business  
integration, wants  
a hub that has  
"information about  
all customers across  
all products."



mation," understates Bob Dolmovich, UnumProvident's VP of business integration and data architecture. One UnumProvident customer's account, for instance, might exist in multiple places within the newly combined company, leading, of course, to a great deal of waste.

For the first couple of years after the mergers, UnumProvident used a homegrown data-store solution as a Band-Aid. But by 2004 the \$10 billion disability insurer felt compelled to embark on a new master data management strategy aimed at uniting the company's disparate pockets of customer data, including account activity, premiums and payments. Core to UnumProvident's strategy would be a customer data integration (CDI) hub, built on service-oriented architecture (SOA), using a standard set of protocols for connecting applications via the Web (in effect, Web services). The project, begun in early 2005, has already improved data quality, soothed the multiple

A CDI hub differs from a traditional CRM solution in that a CDI hub allows a company to automatically integrate all of its customer data into one database, while ensuring the quality and accuracy of the data *before* it is sent to the hub's central store for safekeeping. A standalone CRM system can't do that because it can't be integrated with the billing, marketing, ERP and supply chain systems that house customer data, and it has no way to address inconsistent data across platforms.

What is also missing in many of these earlier CRM implementations, experts say, is a management strategy that identifies important customer data and lays out a

# Huge CRM implementations too often left companies with tools and systems they **couldn't or didn't want to use.**

customer records headaches and created the possibility for a companywide, in-depth customer analysis. But as Dolmovich acknowledges, there's still a long way to go. Of those original 34 systems, he has been able to get rid of only four to date. But he's still optimistic.

"The desired end state is a CDI hub that has information about all customers across all products," he says.

## THE QUEST FOR THE CRM HOLY GRAIL

Despite the long, slow slog, Dolmovich is hoping that the new CDI approach will ultimately give his company the 360-degree view of the customer that has been promised by vendors since the dawn of CRM. In the late '90s, enterprise software vendors like Oracle, PeopleSoft and Siebel sold the single-customer view as CRM's holy grail. But implementation flameouts and legacy integration nightmares soured many CIOs on these expensive enterprisewide rollouts. More recently, on-demand CRM has generated a lot of buzz, but it too has run into scaling and integration problems, particularly at large companies. (See "The Truth About On-Demand CRM," [www.cio.com/011506](http://www.cio.com/011506).)





disciplined governance process to ensure its quality and its integration with critical systems. "Unless companies have a broad strategy about how [to manage their data], no matter how good transactional systems are, they're not going to be able to deliver," says Ronda Krier, Oracle's senior director of product strategy.

An increasing number of CIOs are now realizing the importance of such a data management strategy and are experimenting with Web services technology to unite legacy systems with new applications without having to rip and replace everything. Many of these CIOs are building a service-oriented architecture that can integrate their divergent applications into a CDI hub via the Web.

However, much like the CRM implementations that preceded it, this new approach is neither cheap nor fast. Ray Wang, Forrester Research's principal analyst of enterprise applications, says that average CDI installations cost nearly \$5 million for licenses and implementation services. And they can take much longer than expected. (UnumProvident's CDI implementation, still unfinished, has taken a year so far.) But that's still cheaper and quicker than ripping out all of a company's old systems and installing proprietary enterprise CRM.

A CDI strategy is especially relevant to mid-market CIOs who may not have the budget to buy proprietary CRM solutions or the time to invest in the typically arduous CRM implementation process which, according to Gartner's guideline for enterprise CRM rollouts, can cost more than \$20 million over a three-year period. (Some CRM failures have run up to \$100 million in overall costs. See "AT&T Wireless Self-Destructs," at [www.cio.com/041504](http://www.cio.com/041504), for one disastrous example.)

"The beauty of [the CDI hub approach] is that most organizations already have most of the pieces in place," Wang says. "They just need to find a way to pull it all together."

**Scott Sullivan**, VP of IT, Pitt Ohio Express: "If the customer's address is 'the back gate at K-Mart plaza,' that's OK for the driver, but not for sales and marketing."

## THE PROBLEM'S NOT THE SOFTWARE; IT'S YOU

In the late '90s, CRM vendors promised that their software could give companies the ability to leverage customer data to boost sales. That software cost millions and took years to install, and yet at the end of those marathons many companies were left with tools and systems they couldn't or didn't want to use. Integration often was incomplete, data frequently dirty, and all too often companies had no guidelines for who would own the data or how it would be input and reconciled among systems. Eventually, business and technology executives became disillusioned with the enterprise approach. Many companies, large and small, turned to on-demand CRM, only to find out it also had problems with costly customizations and real-time integration challenges.

In a 2005 Forrester survey of 22 Fortune 1000 companies in North America, Europe and Asia, business and IT leaders voiced widespread disillusionment with their CRM implementations. Just 14 percent strongly agreed that their CRM applications had improved end user productivity, and only 10 percent strongly agreed that they had achieved the business results they were expecting. CRM implementations "always seemed to overpromise and underdeliver," says Dolmovich. In fact, for many years UnumProvident's CIO forbid his IT staffers from using the CRM word to describe their customer data management plans because of the negative connotations attached to the acronym.

In the Forrester survey, executives acknowledged they were partly to blame for CRM's bad reputation. They confessed that they had not spent sufficient time on defining data requirements and managing data quality. In another survey by Cutter Consortium, 64 percent of corporations admitted that they lacked a formal strategy for using the customer data they had spent millions to collect.

"When the company doesn't have rules and policies [for data], the data has been largely corrupt," says Anthony Lye, Oracle's group VP of CRM products.

## THE IMPORTANCE OF BUSINESS OWNERSHIP

The first step toward creating an integrated customer data system is to sit down with key business executives and ask them what they want. Do they want to focus on keeping the customers they have or on attracting new ones? Are they concerned more with decreasing lead generation costs or shortening the sales cycle? Once IT knows what the business side wants to achieve, IT can help the business identify which data sources are important and which are not.

Next, the business and IT need to agree on an infor-



mation management policy: Who has access to what customer information and what can they do with it? How will they access that data? How will they make changes to it?

For CIOs, the key to success is making sure the business takes ownership of customer data. At Ameri-

# The Top 10

Consumer data integration and master data management products in alphabetical order

## 1. Customer Data Hub

Oracle

[www.oracle.com](http://www.oracle.com)

Synchronizes information in a central location from all systems throughout the enterprise to provide a single view of company data.

## 2. Identity Hub

Initiate Systems

[www.initiatesystems.com](http://www.initiatesystems.com)

Provides a system of record for each customer, household or company you do business with by identifying relevant duplicate and fragmented records wherever they may be and linking them across data sources.

## 3. Integration Server

SAS-DataFlux

[www.dataflux.com](http://www.dataflux.com)

Integrates all relevant business rules throughout the IT environment.

## 4. Master Data Management

I2/Teradata

[www.i2.com](http://www.i2.com)

Creates a single enterprise thesaurus to ensure data is consistently described, used and stored within an organization.

## 5. MRM

Siperian

[www.siperian.com](http://www.siperian.com)

Creates and delivers accurate and unified customers views to drive business actions across multiple channels.

## 6. NetWeaver MDM

SAP

[www.sap.com](http://www.sap.com)

Unifies integration technologies on a single platform and is preintegrated with business apps.

## 7. One Data

Data Foundations

[www.datafoundations.com](http://www.datafoundations.com)

Centrally manages master data across multiple subject areas to improve accuracy.

## 8. System 9 MDM

Hyperion Solutions

[www.hyperion.com](http://www.hyperion.com)

Synchronizes master meta-data—such as business dimensions, reporting structures, hierarchies, attributes and business rules—across distributed data warehouses, data marts, analytic applications and transaction systems.

## 9. Universal Customer Master

Oracle-Siebel

[www.siebel.com](http://www.siebel.com)

Unifies customer data across business units and disparate systems to provide a single source of customer information.

## 10. WebSphere Customer Center

IBM

[www.ibm.com](http://www.ibm.com)

Provides real-time, transactional customer data integration.

SOURCE: CDI Institute MarketPulse Survey, May 2006

sourceBergen Specialty Group (ABSG), a \$7 billion pharmaceutical supplier, the mantra that “the business owns the customer data” has been critical to the company’s CRM success, says CIO Dale Danilewitz. In 1999, when ABSG broke away from its parent company’s systems, executives articulated what they wanted: more granular, reliable customer information accessible in one repository and accessible in real-time. It was Danilewitz’s job to make that happen. And although Danilewitz initially believed that an off-the-shelf CRM system might do the trick, he found that his business users’ needs didn’t align with what was on the shelf at the time. So IT cobbled together a mixture of applications and systems to form a homegrown CRM system, essentially a conglomerate of custom-built applications and vendor platforms and databases. In the center, tying everything together, is a data warehouse that provides real-time and historic customer data, and is integrated with other data stored in ABSG’s e-commerce applications, financial systems and customer data applications.

Today, Danilewitz says ABSG’s system satisfies users from the sales, call center and marketing sides. And because these business units understand the data’s worth, Danilewitz says, they take pains to ensure that they don’t add data that will “adulterate” their own systems. “The business users check the data, run reports on the data to make sure it’s accurate, and run technical applications to check quality,” Danilewitz says.

Data stewards from the business, as well as gatekeepers from IT, compose a CRM team charged with driving new data management solutions. But the business users are always in front.

## DESCRIBE, DEFINE, GOVERN

Similarly, when Scott Sullivan joined Pitt Ohio Express, a \$238 million mid-market transportation company, as its VP of IT and services, one of the first things he did was sit down with his business users and help them define what exactly the term *customer* meant to them. Sullivan helped the business narrow its list of customers from 450,000 to 10,000 active consumers of its services. Sullivan also pulled the plug on an ERP system rollout because he thought it wasn’t going to satisfy the company’s needs and was going to take longer than had been originally projected. (The project was greenlighted before Sullivan joined Pitt Ohio in 2001.) Since then, Sullivan has integrated an assortment of existing applications to form a customer management system for the sales and marketing group and the operations department. (For more on the integration challenges confronting mid-market CIOs, see “Stuck in the Middle with SOA,” Page 54.)

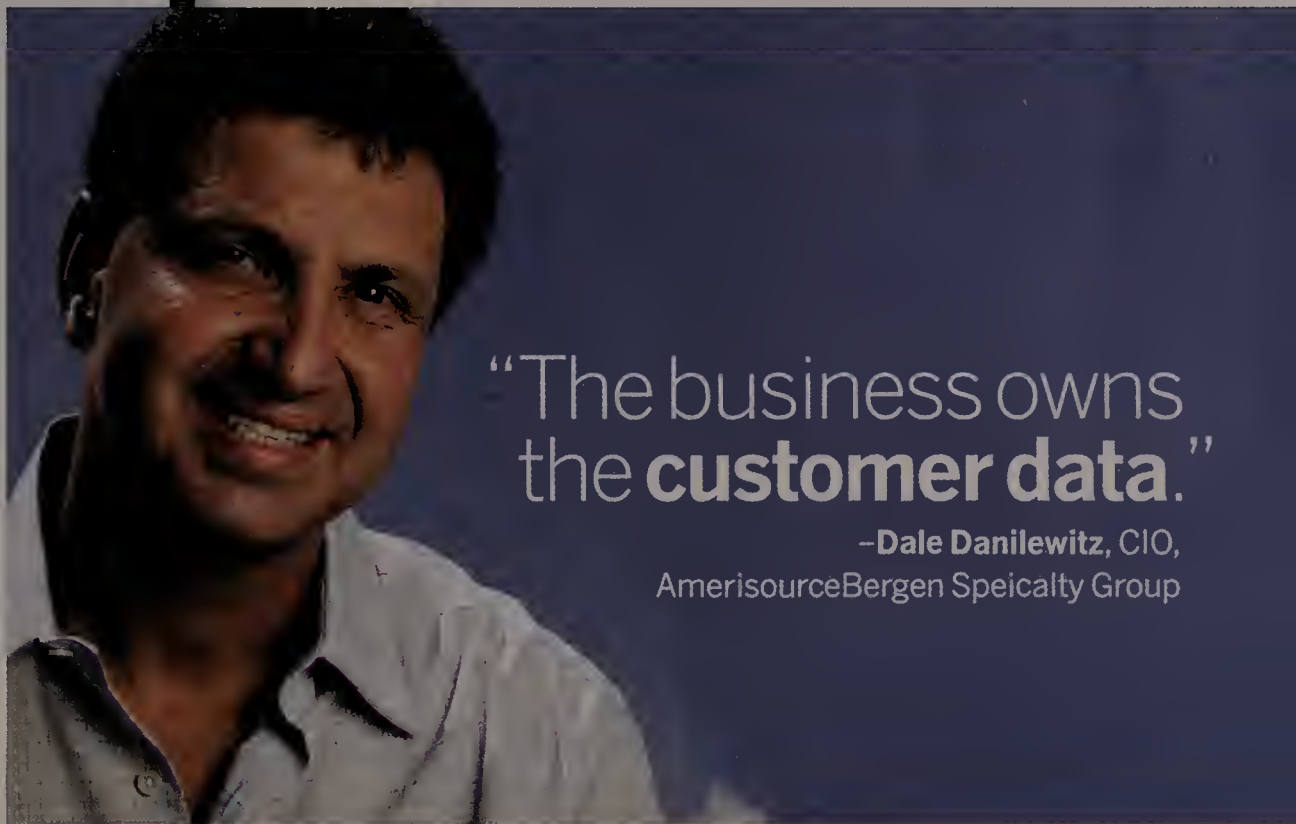
Sullivan also spent time ensuring that Pitt Ohio



Express's customer data was clean. Dirty data is hardly a new problem, but the fact that CIOs are still complaining about it, analysts are still noting its prevalence, and vendors are still selling solutions to address it indicates that it hasn't gone away. Dirty data problems are amplified by the number of systems and users that touch customer data, especially if there are no established governance processes or technology safeguards. For example, Sullivan points to the disconnect in address requirements between the sales and marketing department and the operations division. The sales and marketing group needs exact addresses, whereas drivers can get by with more inexact data. "If the address is 'the back gate at the Kmart plaza,'" he says, "that's OK for the driver, but not so great for sales and marketing." And if no one takes ownership of making sure the data is consistent, "there can be up to 10 to 15 different versions of your customers [within your company]," says Tom Reilly, IBM's VP of master data solutions.

Once your management team has formulated a data management strategy—say it wants to improve the ways in which the company targets and contacts prospects—it's time to consider the technology options available to integrate all the customer data so that sales and marketing will be going after the most appropriate customers. You can go the enterprise vendor route, or have your CRM systems hosted by an on-demand vendor like Salesforce.com. Or you can integrate existing customer-data systems by building a service-oriented architecture or structure using the Web to knit together all the customer information contained within a company's business applications. UnumProvident's Dolmovich decided to go the Web services route. He chose IBM's WebSphere Customer Center product to pull together the pockets of customer data on account activity, payments and premiums.

Dolmovich says the first data loaded into the CDI hub in late 2005 came from business customers (companies or employers that bought or sponsored UnumProvident's disability products) and brokers (the independent businesspeople who sell them). With the new system, Dolmovich says, "We are now able to assimilate and display a broker's entire block of business and create some statistics and a profile of our relationship with that broker." UnumProvident is now working to create individual profiles of employer customers so that every time a new customer account is created or



"The business owns the **customer data**."

—Dale Danilewitz, CIO,  
AmerisourceBergen Specialty Group

accessed—perhaps to change an address or add new customer information—all employees of the insurance company, regardless of what system they are using, will see that change at the same time.

## THE NEW, NEW HYPE

Whenever a new CRM solution emerges, it's inevitably followed by hype, complexity and confusion. CDI is no different, says Colin White, founder of consultancy BI Research. One challenge for companies embarking on a master data management strategy is getting all parties to agree on common definitions and labels for categorizing customer data. Starwood Hotels & Resorts Worldwide is currently in the process of sunseting its legacy mainframe system in order to move to an SOA environment. The aim, says Song Park, Starwood's director of pricing and availability technologies, is to allow for more real-time and online reservation capabilities and transactions for its 900 hotels in 80 countries. But a major pain point for the groups working on the SOA migration has been hammering out the data labels and definitions for the Web services that will be consistent across the SOA implementation. How, for example, one group defines a specific hotel's property identification label can vary from PID, to pID, to property ID, to name just a few of the possibilities, Park says. "How do you synchronize [those labels]? Who owns that data? Who's mapping those things?" Park asks.

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## Whenever a new CRM solution emerges, it's inevitably followed by **hype, complexity and confusion**. CDI is no different.

Park says he's pushing for a data dictionary of pre-established services so that the developers working on the project can employ a common set of labels. "And the developers need to talk to each other," Park adds.

Starwood has multiple systems containing customer data, including individual hotel systems, Starwood's inventory and central reservation systems, a system that determines rates and another to coordinate all of the communication, says Park. Since these systems don't communicate as well as they should, hotel managers have blind spots. They can't understand, for instance,

why some customer interactions are successful (a customer asks for a specific room and it's available) and others are not (the customer asks for a room and doesn't get it). "Today, we can do that [success and reject] analysis to a degree," says Park. But the business users can't see the trends behind success or rejection on a broader scale.

Starwood believes that after its move to an SOA environment all these systems will be able to connect and automatically reconcile all reservations systems data with rate and availability data to ensure that accommodations are available at the right price, place and time. There's so much data flowing through Starwood's systems (upwards of a billion distinct pieces of data) that ironing out the meta-data plan from the get-go is paramount. And the pressure is on, especially from the business side. "It's not a nice-to-have system; it's an absolute necessity to survive," Park says of the SOA migration.

As is the case with all CRM-type implementations, the move to SOA and a customer data management solution won't come cheaply. Forrester's Wang says that an average CDI installation costs around \$1 million for licenses and requires implementation services in the \$3.5 million to \$4 million range. In addition, rolling out a CDI hub often can take longer than what the vendors promise, which is what happened at Unum-Provident. Dolmovich notes that while IT is adding customer data to the CDI hub, it still has to maintain some synchronization of data with the old system until it can be replaced. "It's rare that the initial implementation of a CDI hub actually replaces its predecessor customer files," he says. "There are often many reasons to sustain both, but you do need to begin a migration whereby the CDI hub becomes the system of record, and changes to customer data are propagated as necessary back to legacy files."

The big enterprise vendors have taken note of the rising interest in SOA and CDI, and Forrester's Wang says that both Oracle and SAP have announced that their next-generation applications will offer similar solutions that they claim will play nicely with each other. But CIOs will have to wait for these new products: SAP's SOA will not debut until 2007, Oracle's in 2008.

In the meantime, CIOs need to figure out alternative ways to fix their CRM disconnects. To Wang, the move is a simple yet crucial one. "They need to take a step back and make a plan," he says. **CIO**

Senior Writer Thomas Wailgum can be reached at [twailgum@cio.com](mailto:twailgum@cio.com).

## Stuck in the Middle Without an SOA

Can CIOs at midsize companies just say no to service-oriented architecture? It ain't easy.

According to a 2006 Forrester report by VP Randy Heffner, fewer midsize companies have enterprisewide plans for service-oriented architecture (SOA) than larger ones. The reason most often given, Heffner says, is that IT departments at midsize companies are too small to deploy formal enterprise architecture teams. But, paradoxically, an earlier 2005 Forrester survey reported that 44 percent of small and midsize companies said that implementing an SOA was a high or critical priority.

It seems that many small and midsize enterprises are too small to embark on an SOA implementation but too large to move the enterprise in a common direction without one.

Scott Sullivan, VP of IT and services at mid-market transportation company Pitt Ohio Express, is, like many of his colleagues, stuck in the middle. Sullivan doesn't have a formal architecture team and has no immediate plans for moving to an SOA environment "since we're running software that has been built over the years and don't have the need at this time to look at a different architecture," he says. But, he continues, "It is something we will consider as we move forward depending on the nature of the work and how the approach will fit into our overall environment."

Which qualifies as a definite maybe.

—T.W.



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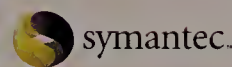


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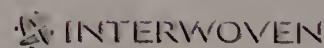


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## Communicating IT's Value: Tools and Tactics

**M**ost CIOs know that educating the business about IT is a key part of their job, but many struggle to find the right tools and tactics. Should they publish a monthly e-mail newsletter or will that just clutter already-bulging inboxes? Should they build support for IT projects one VP at a time or should they draw business peers into a formal cross-company dialogue?

When we asked members of the CIO Executive Council for their advice, it quickly became clear that there's no one-size-fits-all strategy. Sometimes, CIOs say, it's best to simply walk into the VP's office for a quick chat. Other times, a professionally produced report or presentation can bring the IT message to life and make it easier to deliver across the company.

"I've been in this business going on nine years, and there's no way you're going to be successful with one form

of communication," says Scott Kressner, VP and CIO of Rush Enterprises, a Peterbilt truck dealer. "You've got to pick the right one for the right situation."

Here are some tips from Council members on the most effective tools for educating the business about IT.

**1] Formalize the forum.** IT Steering Committee, Executive Board of Customers, Information Resources Users Group—whatever you call it, CIO Executive Council members say that a formal IT advisory

body is one of the most effective means for educating business peers about IT. Of course, CIOs use these advisory boards for feedback on (or, in some cases, approval of) planned projects. But advisory boards also offer CIOs a forum for educating business peers about IT's

capabilities and strategic value. For example, the VP of finance may not be up on how a new sales-force automation initiative is making the sales team more efficient, or the VP of HR may not understand why his website upgrade may need to take a backseat to a critical

supply chain management initiative. The advisory board is where this communication can take place.

For Mark Zielazinski, former CIO at El Camino Hospital, an Information Systems Steering Committee has given him a forum to educate executives about



**SCOTT KRESSNER**

the importance of steady spending on IT infrastructure. As a result, he's had consistent IT capital spending levels for the past three years, a welcome change from the peaks and valleys of the past. "We made them understand what sustained funding is, and the

*Continued on Page 60*

### [TOOLBOX]

## Develop IT Ambassadors

CompuCredit CIO Guido Sacchi has developed an internal IT recognition program around a simple theme: "Be known." He urges IT staff to "be known" by the business for the personal contribution they make to the company. Sacchi's goal was to get his staff out of their cubicles, into the field and close to their internal customers, so the IT staff would be seen as personally responsible for delivering IT value. "I want everybody in IT to be an ambassador for IT," Sacchi says.

Sacchi also uses the Be Known program to help boost the morale of IT staff. He has printed Be Known note cards that his senior managers use to recognize staff for demonstrating value, adding handwritten notes to reinforce the message. For example, "John, thank you for demonstrating leadership in that meeting; I thought you carried the day."

*—Sari Kalin*



**GUIDO SACCHI**



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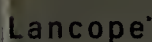


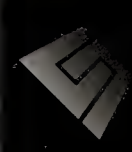
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## Communicating Value *Continued from Page 58*

importance of keeping it smooth," he says.

Several CIOs also use advisory board meetings to educate their business peers about emerging technology trends. For example, at Northrop Grumman Newport News, Leni Kaufman recently briefed her IT steering committee about the benefits of identity management, even though she had no immediate plans to propose a project. "We try to describe things even if they won't start for six to nine months," says Kaufman, VP and CIO of Northrop Grumman Newport News. "By doing this, we increase the IT-savvy of the business," she says.

At Marriott, members of the Information Resources Users Group sometimes have questions about technology buzz. "They bring up things like, 'We hear about voice over IP. What is it?'" says Diane Davidson, Marriott's VP of information resources business planning. "This is a good forum in which to explain it."

**2] Publish, but be willing to perish.** IT-specific publications can play a pivotal role in CIOs' business education efforts, and it's not uncommon for CIOs to produce annual reports and quarterly or monthly newsletters. But publications have to be tailored to the company culture.

At Smurfit-Stone Container, for example, the IT annual report is called the "Customer Report," to emphasize IT's accountability, says CIO Jim Burdiss. Initially, Burdiss had 50 hard copies of the report professionally printed; the report was also posted online. But the sophisticated presentation sparked criticism from the business side regarding the time and the money invested in it. Now the report is posted online only.

"You've got to be careful that what you're doing isn't too slick," Burdiss says. "There's a point of over-marketing

and you've got to be sensitive to that."

At El Camino Hospital, Zielazinski pulled the plug on his monthly e-mailed IT newsletter after a six-month run. People were not opening it. The problem was information overload. The 2,100-

employee hospital has 90 departments, and many have their own newsletters. So now Zielazinski's group contributes to other department newsletters.



**LENI KAUFMAN**

**3] Make it easy to be a missionary.**

While business education is the CIO's job, the right communication tools will help other frontline IT leaders deliver the same message, thereby broadening its reach. Marriott has developed a snazzy seven-minute PowerPoint presentation called "Technology Now" that highlights the company's IT direction and the ways it provides value to the business.

Created on a \$15,000 budget, the PowerPoint has a voice-over and plays by itself. It began its life when Executive VP and CIO Carl Wilson presented it to Marriott's board of directors in November 2005; subsequently, senior IT leaders have shown it to their business partners, and IT leaders in the field have offered it to owners and franchisees.

Marriott's information resources communications department has a formal plan and a tracking document to ensure the presentation is shown at all levels of the company. Marriott also has translated the presentation into Spanish, Chinese and German. "This is a tool for people to use to create a broader communication opportunity with their peers," Davidson says. "People can then tailor the message afterward to the particular group they're talking to." **CIO**

Sari Kalin is a freelance writer. Send comments about this story to [letters@cio.com](mailto:letters@cio.com).

### Communication Toolkit

## How to Reach Out to Technology-Shy Users

**At global nonprofit Save the Children,** one of the biggest challenges facing CTO Edward Granger-Happ is getting people on the front lines to use the new technologies his IT department provides. To illustrate that challenge, Granger-Happ notes that "e-mail was just adopted as the primary means of communication within the last five years."

Granger-Happ takes every opportunity to educate the field staff about the benefits of technology. At a recent training session, for example, he created a scavenger hunt on the corporate intranet both to familiarize the field officers with online content and to get them accustomed to accessing it. Granger-Happ also highlights technologies that have crystal-clear benefit for the staff, such as voice over IP. While it's true that VoIP saves money, the biggest benefit from a user perspective is that a staff member can reach anyone in the organization, around the globe, simply by dialing a four-digit extension. Granger hopes that "when people adopt one technology, they'll adopt more technologies. If they see value in IT in their daily job, they're going to want to use more."

—S.K.

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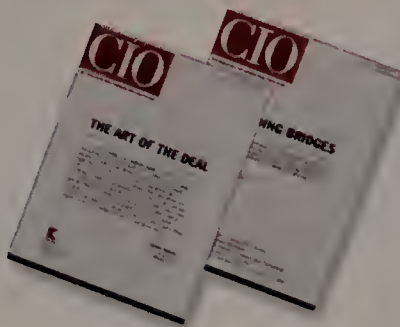
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# endlines

BY SCOTT KIRSNER

BRINGING THE TWAIN TOGETHER



## How to Talk to Americans

**We're pleased to** present this exclusive excerpt from *How to Talk to Americans*, currently topping Indian best-seller lists. *The Chennai Telegram-Gazette* calls it "a penetrating journey into the fragile psyches of our American friends." *The Mumbai Sunday Book Review* advises, "Have it handy during your next conference call with colleagues in San Jose or St. Louis."

When Americans tell you how much they love chai lattes, they are referring to a creamy beverage they believe to be of Indian origin. Just say that you do too.



No one really expects you to read all 267 PowerPoint slides sent as an e-mail attachment. But everyone will be incredibly impressed if you glance at slide 243 and ask whether the x-axis represents thousands or millions.

It is helpful to know who the actress Jennifer Aniston is currently dating. Check [www.usmagazine.com](http://www.usmagazine.com) twice daily for changes.



Americans often may seem agitated. This is due to their constant consumption of expensive caffeinated beverages. If they seem on the verge of a breakdown, you could suggest, "You may want to try shifting from Venti to Tall."

The term ASAP ("as soon as possible") means "work on this quickly and shoddily until I forget that I asked you to do it."



The American brain is not capable of grasping the rules of cricket. Do not try to explain them.



Conference calls exist to give American executives a chance to do something other than listen to talk radio during their commutes to and from work. Much of the hostility expressed during these calls is due to "road rage," not to anything you've done or said.



When the current American president's name is mentioned, a safe response is: "He's very different from his father, isn't he?" (In 2009, it may be necessary to switch to: "She's very different from her husband, isn't she?")



If you have forgotten the names of an American executive's children, you can refer to them as "the kids." As in, "How are the kids?"



The purpose of monthly status meetings is to allow participants to complain that because they've attended so many other meetings since the last monthly status meeting they have not been able to make any progress on any of their projects. Do not mention all the things you have accomplished since the last status meeting. That will antagonize them. Instead, ask for a deadline extension.



When Americans say, "I look forward to your feedback," they mean, "Just tell me it's OK or you'll foul up my timetable."



Residents of certain U.S. regions can discuss Nascar racing but not Woody Allen movies. In other regions, the opposite will be true. See color-coded map in Appendix D.



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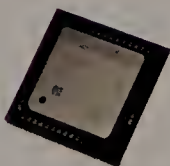
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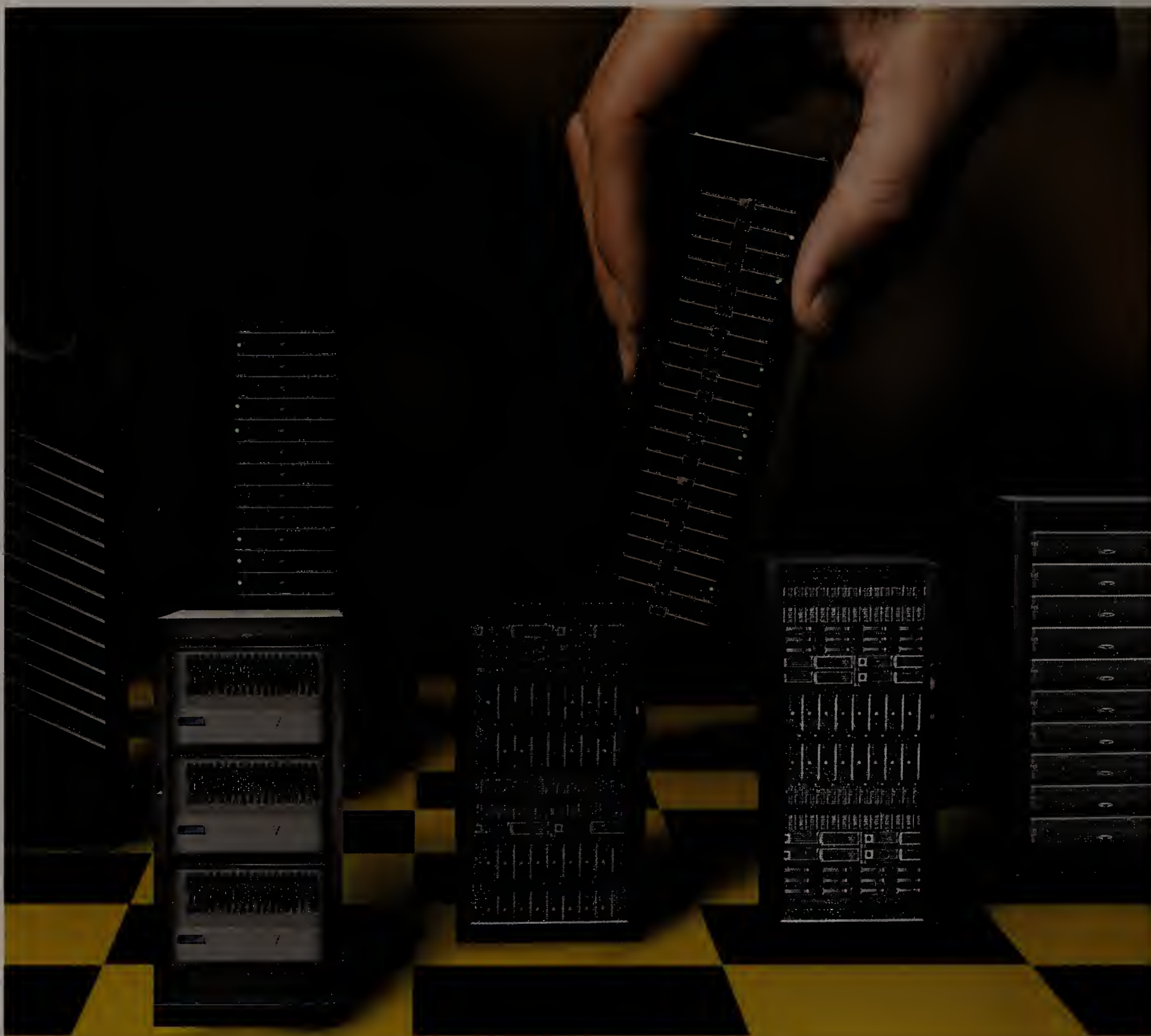
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